EXHIBIT 42

MICHAEL WAYNE BUCK

UNITED STATES DISTRICT COURT

DISTRICT OF MINNESOTA

In re Bair Hugger Forced
Air Warming Products
Liability Litigation

MDL No. 15-2666(JNE/FLN)

Minneapolis, MN

VIDEOTAPED DEPOSITION OF

MICHAEL WAYNE BUCK

Job No. 124783

Taken June 7, 2017 By Cynthia Kirsch

MICHAEL WAYNE BUCK

APPEARANCES:

BLACKWELL BURKE
431 South Seventh Street
Minneapolis, Minnesota 55415
By: Ms. Deborah Lewis, Esq.
Ms. Charmaine Harris, Esq.
For Defendants 3M Company and
Arizant Healthcare Inc.

MESHBESHER & SPENCE
1616 Park Avenue South
Minneapolis, Minnesota 55404
By: Ms. Genevieve Zimmerman, Esq.
For Plaintiffs and Deponent

KENNEDY HODGES
4409 Montrose Boulevard
Houston, Texas 77006
By: Mr. Gabriel Assaad, Esq.
For Plaintiffs

ALSO PRESENT: Kraig Hildahl, Videographer

MICHAEL WAYNE BUCK

I N D E X

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QUESTION INSTRUCTED NOT TO ANSWER

MICHAEL WAYNE BUCK

THE VIDEOTAPED DEPOSITION OF MICHAEL WAYNE BUCK is taken on this 7th day of June, 2017, at Blackwell Burke P.A., 431 South Seventh Street, Suite 2500, Minneapolis, Minnesota, commencing at 9:16 a.m.

THE VIDEOGRAPHER: This is the start of tape labeled 1, the videotaped deposition of Michael Buck in the matter of In Re Bair Hugger Forced Air Warming Products Liability Litigation filed in the U.S. District Court for the District of Minnesota, Case No. 15-2666-JNE/FLN.

This deposition is being held at Blackwell Burke law firm in Minneapolis, Minnesota, on June 7th, 2017. The time is 9:17 a.m. My name is Kraig Hildahl. I'm the legal video specialist from TSG Reporting. The court reporter today is Cynthia Kirsch.

Will counsel please introduce themselves for the record.

MS. ZIMMERMAN: Yes. Genevieve Zimmerman on behalf of the plaintiffs in the MDL.

MR. ASSAAD: Gabriel Assaad on behalf of the plaintiffs in the MDL.

MS. LEWIS: Deborah Lewis representing the

defendants 3M and Arizant Healthcare, Inc.

MS. HARRIS: Charmaine Harris also for defendants 3M Company and Arizant Healthcare.

THE VIDEOGRAPHER: Will the court reporter please swear in the witness, and then we can proceed.

THE REPORTER: Can you please raise your right hand to be sworn.

Do you solemnly swear that the testimony you're about to give in the following proceeding will be the truth, the whole truth, and nothing but the truth?

THE WITNESS: I do.

EXAMINATION

BY MS. LEWIS:

Q State your full name, please.

A Michael Wayne Buck.

Q Mr. Buck, good morning.

A Good morning to you.

Q My name is Deborah Lewis, and we met this morning just before your deposition; correct?

A That's correct.

Q You understand that I represent the defendants 3M and Arizant Healthcare, Inc., in this

lawsuit?

A I do.

Q And I understand you have been retained as an expert witness on behalf of plaintiffs; is that correct?

A I have, yes.

Q Is this the first time you've ever given a deposition?

A A full deposition like this, yes. I gave a -- it was called a deposition -- to an OSHA representative back in the early '90s. It was a personnel issue at the University of Minnesota in relation to a filed complaint. So -- I believe the OSHA's officer's name was Sherrill Benjamin. And I sat down and -- he called it a deposition, but it wasn't anything like this.

Q Were you sworn under oath?

A I believe I signed a piece of paper that said that the information that I gave him was factual and to -- the truth based on what I had -- the information that I provided.

Q You understand today that you are sworn and under oath to be truthful; correct?

A I do.

Q You understand that your testimony today is subject to the penalties of perjury just as if you were sitting in a courtroom?

A I do.

Q Do you understand a little bit about the deposition process, that I will be asking you questions, and then I am expecting an answer from you; correct?

A Yes. That was explained to me by -- yes.

Q By Ms. Zimmerman?

A Yes.

Q All right. Are you represented by counsel today? Meaning is Ms. Zimmerman your attorney?

MS. ZIMMERMAN: Yes.

THE WITNESS: Yes.

BY MS. LEWIS:

Q You have retained Ms. Zimmerman to represent you today?

MS. ZIMMERMAN: Counsel, this is an expert deposition. I mean, he's retained by the plaintiffs to serve as an expert. He's not here as a fact witness, so he's here in his capacity as a retained expert on behalf of the plaintiffs.

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BY MS. LEWIS:

Q Do you -- you understand that the questions that I'm going to be asking will be based -- we'll be asking you about sort of the opinions that you have offered in this case; is that correct?

A Yes.

Q If I asked you a question and you don't understand my question, will you let me know that you do not understand it?

A Yes, I will.

Q If you need to take a break, will you let me know that as well?

A Yes, I will.

Q Can I get an agreement from you that if you answer my question that you understood my question?

A Yes.

(Exhibit 1 was pre-marked for identification.)

BY MS. LEWIS:

Q I have put in front of you some exhibits. The first one is Exhibit 1. That is the subpoena for your deposition this morning.

Can you take a look at that and see if that is a document that you have reviewed.

A Yes, it is.
Q Part of that document, Exhibit 1, is an Exhibit A that is attached to that subpoena.
And you did bring some documents in response to Exhibit A today?
A What would those documents be?
Q Why don't you turn to Exhibit A, which is -- looks like the next-to-the-last page there.
Have you reviewed this Exhibit --
A Yes --
Q -- A?
A -- I have.
Q Do you believe that the documents that you brought today are in response to Exhibit A?
A Yes.
(Exhibit 2 was pre-marked for identification.)
BY MS. LEWIS:
Q Also in front of you is Exhibit No. 2. Can you take a look at that.
Exhibit 2. Can you tell us what that is, please.
A This is the report that I generated as a result of my work with the Bair Hugger, the testing

that was completed, and it also includes my summary of experience and my work history.
Q Is that a complete copy of your report?
A Yes.
(Exhibit 3 was pre-marked for identification.)
BY MS. LEWIS:
Q Also in front of you is Exhibit 3. Can you tell us what Exhibit 3 is, please.
A Exhibit 3 is pictures to describe the testing that we did and placement of some of the equipment and to validate that we were actually using the model Bair Hugger that is listed in the report.
Q The pictures that are in Exhibit 3 are the pictures that we received from plaintiffs' counsel.
Are those all of the photos that you sent along with your report to plaintiffs' counsel?
A Yes.
(Exhibit 4 was pre-marked for identification.)
BY MS. LEWIS:
Q You brought a manila folder with you this morning, and we have marked it as Exhibit 4.
Can you tell us what Exhibit 4 is, please.

A Exhibit 4 is my notes from the testing that was completed, and it also includes a couple of articles that I looked at briefly just to see comparisons and to look at the content of the articles.
But most of the data or most of the enclosed material is my notes from the testing and the data that was collected as a result of the testing.
Q Some of the data that is attached to some of your graphs in Exhibit 4 were not attached to your report that you sent to Ms. Zimmerman; is that correct?
A Yes, just as a matter of ease. The data or the graphs tell exactly what the data says so ...
Q So the data that is now in Exhibit 4, is that all of the data that you collected during your testing?
A Yes.
Q May I see Exhibit 4.
Also in Exhibit 4 -- or what's not in Exhibit 4 are additional photographs.
So is Exhibit 3 the document that contains all the photographs that you took during your testing?

A I have additional photographs -- but they are basically the same types of photographs -- that I have on a flash drive.
Q Is there a reason that you did not include them in Exhibit 4?
A No. Just because they are the same pictures over and over. I just -- I took multiple pictures just to make sure that I had a good quality picture to include.
Q What are the pictures that you took that aren't included in Exhibit 3?
A What are they?
Q Yes.
A They are the same items.
Q Are they photos -- or additional photos of the clean room, for example?
A Yes, they were taken in the clean room. Some, yes.
Q Do they show a larger picture of the clean room? I'm just trying to understand what the other photos show.
A They show basically different angles or maybe a -- a wider angle of this same setup or the clean room, as you call it, yes.

Q Approximately how many other photos do you have that weren't included in the photos that you submitted to Ms. Zimmerman?

A Probably less than 20. Maybe somewhere between 10 and 20.

Q They are on a flash drive that you still have and possess?

A I do, yes.

Q You would be able to provide those photos to Ms. Zimmerman?

A I would.

Q One of the articles that you have in Exhibit 4 is titled "A novel method of personnel cooling in an operating theatre environment."

Was this particular article listed in the materials that you considered that you attached to your expert report?

A No.

Q When did you pick up this particular article, "A novel method of personnel cooling in an operating theatre environment"?

A I don't recall at what part of the process I obtained that article, but I didn't use any of that article for the testing that I did in -- as a result

of this report.

Q Where did you get this article from?

A I don't recall if I got that from my colleague that I did the testing with or if I printed it off the Internet myself. I don't recall.

Q Why is this particular article in your Exhibit 4, in your notes?

A Just because it was thrown in with -- as I was doing the project. Just something that was part of the discussions that we had, or I found this and it was just -- I just threw it in the folder.

I was told to provide everything that was used, so I -- you know, whether we used it or not or, you know, if I printed it off, I felt that I should include it.

Q Did you consider this article --

A No.

Q -- in your testing?

A No, I did not.

Q Did you consider this article in forming your opinions?

A No, I did not.

Q In Exhibit 4, your notes, is one of the studies by Mike Reed titled "Forced-Air Warming

Design: Evaluation of Intake Filtration, Internal Microbial Buildup, and Airborne-Contamination Emissions."

Was this article included in the materials that you considered?

A No, it was not.

Q Did you rely at all on this study from Mike Reed in your testing or your opinions?

A No, I did not.

Q Why is this in your -- Exhibit 4 in your notes?

A The same reason as the previous article was included. Just -- it was something that either myself or Mr. Streifel found, and it was included in the folder just as a reference if we wanted to or as part of our project, if we would -- wanted to reference it or not.

Q And you decided not to?

A Yes.

Q So you were not relying on the Mike Reed study at all --

A No.

Q -- as the basis for your opinions?

A No.

Q Okay. Can you bring back in front of you Exhibit A to Exhibit 1. I'd like to run through Exhibit A just to make sure I understand what's -- what you did bring, what's responsive, and what you did not have. All right.

No. 1 under Exhibit A asked for documents that you reviewed in anticipation of or in preparation for your deposition.

Did you bring any documents that you reviewed in anticipation for your deposition today?

A Yes. They are included in Exhibit 4.

Q Any other documents that you reviewed in preparation for your deposition that are not contained in Exhibit 4?

A No.

Q No. 2 asked for correspondence and documents between you and non-lawyers, including but not limited to notes, or investigations, test results, raw data, experiments, demonstrations, photographs, videos, movies, et cetera.

Did you bring documents responsive to No. 2?

A Yes, I brought all of the documents.

Q All those documents are in Exhibit 4?

A Yes.
Q No. 3, of course, asked for your notes, and those are contained in Exhibit 4; correct?
A Yes.
Q No. 4 to Exhibit A asked for documents provided to you by plaintiffs' counsel in which you may have made notations, highlighting, or underlining.

Are there any documents responsive to No. 4?
A They are also included in Exhibit 4.
Q No. 5 asked for items that you might use as either demonstrations or exhibits or aids in the course of your testimony at trial.

Beyond the documents that you have in Exhibit 4, are there any other documents that are responsive to No. 5?
A No.

MS. ZIMMERMAN: And, Counsel, I'll just interject for the record that we will disclose any exhibits that we may intend to offer during the course of the trial, consistent with what I expect to be a forthcoming scheduling order. But just to the extent that we may have demonstratives or that sort

of thing --

MS. LEWIS: Sure.

MS. ZIMMERMAN: -- we'll disclose those.

BY MS. LEWIS:
Q At this time have you made any additional exhibits that you would want to use at trial?
A No.
Q No. 6 asked for a list of books that you have authored or co-authored.

Did you bring such a list?
A I believe it is included in the --
Q In your --
A -- CV.
Q CV?
A Yes.
Q Okay.

MS. ZIMMERMAN: And, again, just for the record, his complete report, which I think that you have, Counsel, does include both what I think is Exhibit A and Exhibit B and also his CV --

MS. LEWIS: Correct.

MS. ZIMMERMAN: -- and I don't see that that's marked in front of him.

///

BY MS. LEWIS:
Q Was that a part of the entire -- did you consider that part of your report, your CV?
A I was asked to provide it.

MS. ZIMMERMAN: I think it's specifically referenced.

MS. HARRIS: It is.

MS. ZIMMERMAN: Yeah.

MS. HARRIS: It is.

MS. ZIMMERMAN: Yup.

MS. HARRIS: Exhibit A.

MS. LEWIS: Okay.

I've got one. I'll just get you a stapled one.

MS. ZIMMERMAN: And if you don't want it in the record -- you know, we don't have any specific objection. Just want to make sure we're being complete.

(Exhibit 5 is marked for identification.)

BY MS. LEWIS:
Q Exhibit 5 is your CV that you attached to your expert report.

Can you take a look and make sure that it's what you provided.

A Yes.
Q Is that the most current resume or CV that you have?
A Yes, it is.
Q Is there anything that's missing from your CV that should be there?
A I don't believe so, no.
Q Let's go back to Exhibit 1 and Exhibit A.

No. 7 asked for all books or articles or publications that you consider authoritative with respect to your opinions.

And although it asks for all books -- that might be too much -- but can you list for me the books -- maybe I'll just ask you that.

Can you list for me the books that you consider authoritative with respect to your opinions.

MS. ZIMMERMAN: That he relied upon or?

MS. LEWIS: That you relied upon -- that you consider authoritative.

MS. ZIMMERMAN: Well, I'll just object. I think that his report references any and all books and treatises and other works that he finds authoritative or -- upon which he relied. And I think that he didn't rely on any.

BY MS. LEWIS:

Q For the materials considered that was a part of your report, did you consider any of those articles or publications or studies authoritative?

MS. ZIMMERMAN: Same objection.

You can answer if you have ...

THE WITNESS: I'm sorry. Could you ask me that again?

MS. LEWIS: Sure.

BY MS. LEWIS:

Q I'm trying to understand whether the materials that you listed in your report as materials considered, did you consider any of those materials that you listed and considered authoritative?

A The materials as in the content of the report? I guess I don't understand where you're -- what you want me to answer.

Q Well, you listed a lot of materials that you considered; correct? Is that correct?

A Yes.

Q What I want to know is, did you consider any of those materials on that list an authority --

MS. ZIMMERMAN: Counsel, can you be --

MS. LEWIS: -- with respect to your

opinions?

MS. ZIMMERMAN: Can you point him to a -- to a specific list that you're asking him to look at?

MS. LEWIS: Yeah. Let's see if I brought it.

I will get it for you.

BY MS. LEWIS:

Q Do you remember preparing the list of materials considered? Do you remember preparing that list?

MS. ZIMMERMAN: Why don't -- why don't we take a break, and you can get a copy of the list that you're asking him a question about.

MS. LEWIS: Do you have a copy?

MS. HARRIS: I do. I have some writing on it, so I'll get a clean copy.

MS. LEWIS: Okay.

MS. HARRIS: Do you want to see --

MS. LEWIS: No. Go get a clean copy.

We'll keep going, and we'll come back to that question. All right?

THE WITNESS: Okay.

MS. LEWIS: No. You know what. I had it. Never mind. Let me make sure I didn't write on it.

(Exhibit 6 is marked for identification.)

BY MS. LEWIS:

Q All right. Exhibit 6. Take a look and let me know if that is a list of the materials that you included in your expert report.

MS. ZIMMERMAN: And to the extent it's helpful, I can say that we prepared this list as an index of everything that was sent over. Whether it was something that you relied upon or considered is a different ...

THE WITNESS: No, I did not rely on any of this material to complete my report.

BY MS. LEWIS:

Q Do you rely on any of those materials in support of your opinions?

A No, I do not.

Q All right. Let's go back to Exhibit A of Exhibit 1.

No. 9 asked for an engagement agreement concerning your services rendered in connection with this matter.

Do you have an engagement agreement with plaintiffs' counsel for your services? In other words, a written agreement. Do you have a written

engagement agreement saying, you know, I've been retained, here's what I'm charging, anything like that?

A I believe it was included in the report -- well, it's listed, what my charges were.

Q Okay. So there's no separate written document between you and plaintiffs' counsel that defines the relationship and your retention, et cetera?

A I guess, unless I'm confused, no.

Q Okay. What I just mean is sort of like -- you can call it a contract or engagement agreement, just kind of saying, here's -- you know, we've -- we've asked you to serve as an expert witness --

A Yes. We had a verbal agreement.

Q But nothing in writing?

MS. ZIMMERMAN: That's correct, Counsel.

THE WITNESS: Not that -- no.

BY MS. LEWIS:

Q Okay. No. 10 asked for an itemized list of your time, your charges, your expenses.

Is that contained in Exhibit 4?

A It is not. I have that. It is in my folder. I wrote down a list of times, dates and

times, and I forgot that in my car. So I apologize for that. I can get that to you. I can furnish that to counsel and it -- can provide that to you.

Q At this point you have not provided counsel with an invoice for services that already reflects your time and the number of hours that you've spent already?

A I reviewed that with counsel yesterday. I have received payment from counsel as a initial payment. And I have not submitted my final hours because I'm still doing work or proceeding with work as a result of what they've asked me to do.

Q So you are doing additional work beyond what you have already provided in your expert report?

A No. I have met with counsel to review my report before my deposition.

Q Although you don't have that document in front of you, how much have you received already for your services?

A I've received $5,000.

Q Was that a retainer?

A Yes.

Q When did you receive that?

A It was quite a while ago. I want to say

maybe somewhere between December and January or November and January.

Q Did you receive it initially once you were retained?

A Not initially. I had done some work or we had a couple of meetings discussing the project and if we could complete the project for them; but shortly after that, yes.

Q What is your best estimate on how much time you've spent so far?

A I went over that with counsel yesterday. And prior to my showing up yesterday, I had spent 46 hours.

Q Do you charge a hourly fee after the retainer for your services?

A It was based on an hourly fee, and I went up to -- when I go beyond retainer, I will send them another bill.

Q Right. My understanding, I think, from your report is you charge 200 an hour; is --

A Yes --

Q -- that right?

A -- that's correct.

Q All right. So 46 hours so far at 200 per

hour; right?

A 25 hours would -- was what -- the time that I used up the $5,000 at 25 hours, and I let them know that I had 46 to date.

Q Other than the time you spent yesterday preparing for this deposition, is there any other work that you believe you need to do for your opinions?

A No.

Q You mentioned another gentleman, I think, who was helping you with testing; is that right?

A That's correct.

Q Who is that?

A Andy Streifel.

Q Can you spell Andy's last name?

A S-t-r-e-i-f-e-l.

Q Who is Andy Streifel?

A Andy Streifel is a hospital environmentalist. He works with me at the University of Minnesota.

Q He's not your employee? He's not your employee; correct?

A We are coworkers. And our job -- he has been my employee on a couple of consulting jobs that

we have completed together, but he is not my employee.

Q Your independent contractor maybe, sort of?

A No. We are working on this -- or we worked on this project together.

Q Okay. How do you know Andy?

A I've known Andy since 1991 when I began my employment at the University of Minnesota.

Q In what way was Andy helping you with your testing?

A Andy helped me with all phases of the testing. He initially met with counsel to discuss the project, and he asked me to come in and to assist and work with him to complete the testing and the report that was written.

Q Did Andy help prepare the report?

A Andy reviewed my report for clarity and made some suggestions to me. But, for the most part, I wrote the report.

Q Does Andy have -- you said he was a hospital environmentalist?

A Yes, he is presently a hospital environmentalist.

Q Does he have a degree behind his name, be it Ph.D. or a master's? Do you know?
A He's an MPH.
Q Okay.
A Master of public health.
Q I'll get more into kind of his involvement as I talk to you about your testing.
Does Andy charge you for his time?
A No. Andy is charging the law firm --
Q Plaintiffs' counsel?
A -- that we're working for.
Q Okay. Which law firm is that that you're working for?
A Meshbesher Spence.
Q Any other law firm?
MS. ZIMMERMAN: He's --
MS. LEWIS: I just --
MS. ZIMMERMAN: -- been retained on behalf of the plaintiffs in the MDL.
MS. LEWIS: Okay.
BY MS. LEWIS:
Q No. 11 to Exhibit A -- if you'll pick that back up -- asked for documents or other materials you intend to show to the jury.

Have you made a determination at this point on what you believe you want to show or intend to show the jury?
A It would be the report that I completed.
Q Any other documents beyond what you've brought here today?
A No.
Q No. 12 asked for your correspondence file, excluding any correspondence that you'd have with plaintiffs' counsel.
Is there any correspondence -- I didn't really notice correspondence in Exhibit 4. Is there any correspondence you have with any other -- with any other person or entity concerning this lawsuit?
A No.
Q 13 to Exhibit A asked for documents or photographs or other material not specifically listed above on which you rely for your opinions.
Any other documents beyond the exhibits that are on the table in front of you?
A No.
Q Okay. 14 asked for communications with plaintiffs' counsel that contain facts and data or assumptions provided by counsel and that you

considered in forming your opinions in this case.
A Those are also in -- all included or -- whatever is in Exhibit 4 is what I have.
Q Okay. No. 15 asked for any written communications between you and quite a few folks here.
Mark Albrecht. Any?
A No.
Q What about Kumar Belani?
A No.
Q Robert Gauthier?
A No.
Q A.J. Hamer?
A No.
Q David Leaper?
A No.
Q Any communications with A.J. Legg?
A No.
Q Paul McGovern?
A No.
Q Christopher Nachtsheim?
A No.
Q Michael Reed?
A No.

Q Gregory Stocks?
A No.
Q Or Dr. Darouiche?
A No.
Q Okay. No. 16 asks for any communications, anything in writing, including e-mails between you and Scott Augustine.
A No.
Q Do you know who Scott Augustine is?
A I have heard of the name, yes.
Q Have you met Augustine?
A I have not.
Q Do you have any communications with any agent of Scott Augustine, including his attorney Randy Benham?
A No.
Q Do you know who Randy Benham is?
A No, I do not.
Q That was No. 17.
So the answer to No. 17 is you don't have any communications or e-mails between you and Randy Benham?
A No.
Q Or an agent of Randy Benham?

A No.
Q No. 18 asks for any communications, including e-mails, between you and some of Scott Augustine's family members; Brent Augustine, Sue Augustine, Garrett Augustine, Ryan, or any other agent or employee of Augustine.
Any communications responsive?
A No.
Q 19 asked for study -- any study, test, trial, experiment, research or data analysis that you sponsored, conducted, performed.
And I know what we have with respect to your expert report, but beyond your expert report, do you have any other study or test or experiment or research that you performed on the Bair Hugger?
A No.
Q 20 asked for any communications or documents that you either sent to or received from any forced-air warming manufacturer.
Any responsive documents?
A No.
Q I understand you have a B.A. in biology; correct?
A Yes.

Q You received that in 1989?
A Yes.
Q Do you have any degree beyond your Bachelor of Arts?
A No.
Q Do you have any extra training, extra courses in microbiology?
A I've taken a graduate environmental microbiology course from Dr. Vesley through my time at the university.
Q How many course hours was that one course?
A It was either three or four credits, class and lab.
Q What did that class or lab --
A Class and lab, I should say; combined.
Q What did that course include?
A Lecture, environmental microbiology principles; and then the lab work was completing designed lab exercises that were provided by the instructor that were completed by students with reports for each experiment or each exercise.
Q Was that a part of your B.A. degree?
A No.
Q Afterwards?

A Yes.
Q When did you take this course?
A It would have been sometime in the mid-90s or -- early to mid-90s.
Q Do you hold yourself out as a microbiologist?
A No.
Q You don't hold yourself out as an expert in microbiology?
A No.
Q I don't notice from your CV that you've given any presentations on microbiology or bacteria; is that correct?
A Yes, that's correct.
Q Is it also correct you have not written any articles about microbiology or bacteria; correct?
A Correct.
Q Do you have any special training or courses in aerobiology?
A I did take -- I forget the exact description of the class -- but I did take Dr. Vincent's class that dealt with ventilation. And he used a book that dealt with those principles. Yes.
Q One course you took?

A Yes.
Q When was that?
A Same time frame.
Q Mid-90s?
A Yes.
Q Do you hold yourself out as an expert in aerobiology?
A No.
Q Do you have any specialized training in filtration?
A No.
Q You don't hold yourself out as an expert in filtration?
A No.
Q Are you a member of ASHRAE?
A I am not.
Q Do you know what ASHRAE is?
A I do.
Q Have you followed any ASHRAE standards in any work that you do?
A Yes. There are certain principles or guidelines in ASHRAE that are followed.
Q Which standards are you familiar with that you might follow?

A Some of the ASHRAE ventilation standards for specialty care environments in a hospital.
Q Do you know which standards you're referring to?
A Not off the top of my head, but -- I think 152 is a ventilation standard. I'd have to look it up.
Q Any other standards that you follow?
A Not that I can think of off the top of my head. No.
Q Any specialized training or courses in heat transfer?
A No.
Q Do you hold yourself out as an expert in heat transfer?
A No.
Q Have you been involved in any clinical trials?
A No.
Q Any specialized training in infectious diseases?
A No.
Q Do you hold yourself out as an expert on infectious diseases?

A No.
Q Do you hold yourself out as an expert on surgical site infections?
A No.
Q Have you ever been involved in or consulted with a manufacturer on patient warming devices?
A No.
Q Before being retained in this lawsuit, have you ever contacted a device manufacturer concerning patient warming devices?
A No.
Q Is it true that most of the experience that you have, based on your CV, deals with asbestos, lead, and water intrusion issues?
A I don't know if I would say "most." My asbestos experience goes from 1989 to 1999. From that point forward, I have been involved in indoor air quality. Most of that work has involved water management or water damage in buildings as a result of that.
But in addition to that, I've also done work or completed work in the hospital in that regard as well, in addition to doing general routine or routine types of hospital environment checks in the

hospital.
Q Give it -- give me an example.
A Monitoring pressure, doing particle counts in specialty care areas, operating rooms, bone marrow transplant rooms, those types of things, checking pressure management in operating rooms with handheld devices such -- like a handheld digital pressure gauge, those types of activities.
Q You mentioned particle counting. For what hospitals have you been asked to do particle counting?
A Well, the University of Minnesota, a hospital, Fairview, Fairview Riverside. That is part of my job. When they have a concern or an issue that comes up, they would call and ask us to evaluate a space, and we would do that.
Q And --
A Either Andy or myself or both of us.
Q And they would ask you to do what with respect to the space?
A Verify environmental conditions to make sure that the space was performing or that it was -- expectations were met as far as pressure management issues.

Q Meaning maintaining positive pressure in a particular room compared to another room?
A Correct.
Q Have you been asked, with respect to Fairview, to do any particle counting in its operating room?
A We have from time to time done particle counting and pressure checks in the operating rooms at Fairview, yes.
Q How many times?
A Over -- since 1999. I couldn't come up with a number for you other than to say several.
Q Any other hospital that has asked you to do particle counting?
A Specifically particle counting --
Q Yes.
A -- or particle counting as part of my work in that hospital that I did as a result of verifying environmental conditions?
Q What would be the difference?
A I'm asking.
Q I just want to -- at this point I'm talking about particle counting.
Has any other hospital asked you to come in

and do particle counting in its operating room?
A Have they specifically asked me to do particle counting or have they asked me -- I guess I don't know how to answer what you're saying.
Because I've done particle counting as a result of work that I've done in hospitals to verify conditions. Have they actually written me a request saying will you particle count in our operating rooms? No. I've -- but I have done particle counts in operating rooms in other institutions, yes.
Q Are you saying that every time you are asked to do an evaluation of an OR, for example, you always do a particle count?
A I would say mostly -- most of the time, yes.
Q What's your reason for doing a particle count in the OR?
A To verify environmental conditions and verify that the concentrations of particles in the room would be acceptable --
Q Acceptable --
A -- based --
Q -- to -- to who?
A Acceptable to the environmental conditions or the -- what we call the inside/outside controls or

those types of things where you would expect reduction of particles based on the filtration efficiency in the operating room.
Q Is there a requirement by ASHRAE for a particular particle count number in the OR?
A There is a -- certain guidelines that are expressed by ASHRAE for operating rooms, yes.
Q In terms of particle counts?
A In terms of pressure management, yes.
Q Well, pressure management is different from particle counts; right?
A Correct.
Q So I'm asking about particle counts.
A As far as particle counts go, I'm not aware of any that are in the operating rooms.
Q Before being retained in this case, had you ever done any testing on the Bair Hugger patient warming system?
A No.
Q Had you heard of the Bair Hugger patient warming system before you were retained as an expert in this case?
A I had seen the Bair Hugger in some ORs that I've been in.

Q Explain -- what do you mean by --
A It just --
Q -- "seen"?
A -- basically -- or seen it in an operating room environment, yes. I've walked by it, the machine.
Q During an actual surgery?
A No. No.
Q Before being retained in this case, had you ever written an article about the Bair Hugger patient warming system?
A No.
Q Before being retained had you ever contacted any hospital to complain about the Bair Hugger patient warming system?
A No.
Q Had you ever written the FDA or the CDC about the Bair Hugger patient warming system?
A No.
Q Had you ever read any articles or studies -- again, before you were retained in this lawsuit -- about the Bair Hugger patient warming system?
A No.
Q Before being retained in this lawsuit, had

you ever been asked to do any testing on any other patient warming system?
A No.
Q Are you aware of the names of any other patient warming systems?
A Am I aware of -- yes, I am aware of a product called a HotDog. Other than that -- that's about the only other patient warming device that I'm aware of.
Q Have you been asked to do any testing on the HotDog --
A No.
Q -- warming system?
A No.
Q Have you been asked -- are you aware of a product called WarmTouch?
A No.
Q Mistral Air?
A No.
Q So you've not been asked to do any testing on the WarmTouch or Mistral Air?
A No.
Q Is that correct?
A Yes.

Q Have you ever conducted any testing on HEPA filters?

A No, I don't believe I have.

As far as -- can I -- as far as, like, in a special design study?

Q For example, has anyone retained you and said, Can you do testing on a particular HEPA filter?

A Okay. That's what I thought you meant. Then no.

Q Okay. Before being retained in this lawsuit, have you made any public statement at all about the Bair Hugger?

A No.

Q Have you made any statement to or written to ASHRAE about any of its standards, complaining about any of its standards?

A No.

Q In particular with respect to hospital systems.

A No.

Q There is -- I think you wrote a chapter in a book, "Infection Prevention Manual for Construction and Renovation"; is that right?

A Yes.

Q According to your CV, the chapter is, I guess, titled "Air Monitoring for Quality Evaluation in Healthcare"; is that right?

A Yes.

Q Does that chapter talk about particle counting?

A In terms of air sampling and things that you recover on an air sampler, it generally speaks to that, but it doesn't specifically speak to particle counting.

Q Do you still have a copy of that Chapter 5?

A Somewhere I do.

Q Could you get a copy of that chapter and pass it on to Ms. Zimmerman?

A I believe so, yes.

Could you let me know -- what year was that?

Q You say APIC 2015.

A Okay. Yeah. I can get that.

Q Okay. Have you written any other chapter on air monitoring other than what's listed here in your CV?

A No.

Q Before you were retained in this case, did

you review any scientific articles or studies about the Bair Hugger?

A No.

Q Have you written any articles about bacteria or particles in bacteria?

A No.

Q Let's talk a little bit -- you're okay, or do you need to take a break? Are you okay?

A I'd like one in a few minutes, if we could, please.

MS. LEWIS: Well, why don't we take one now.

THE WITNESS: Okay. Thank you.

MS. ZIMMERMAN: We've been going about an hour.

THE VIDEOGRAPHER: Going off the record at 10:16 a.m.

(Recess.)

THE VIDEOGRAPHER: This is Video No. 2 in the deposition of Michael Buck. Today is June 7th, 2017. Going back on the record at 10:23 a.m.

BY MS. LEWIS:

Q Mr. Buck, I want to talk to you a little bit about what you do, sort of, for hospitals or your familiarity with hospitals; and in particular,

operating rooms.

Is more of your work that you do for hospitals in the operating room or other rooms?

A I would say most of the work that I've done in hospitals has been in other areas, but I do do work in operating rooms as well.

Q Those other areas where you might do work, are they areas that you talked about, either critical care areas or --

A Yeah --

Q -- what other --

A -- construction --

Q -- areas?

A It would be construction areas, areas under construction, putting barriers up, keeping what's in the construction area in the construction area as far as pressure management issues, those types of things.

And that happens all over the hospital, not just in operating rooms, so there's many more projects that are happening in other areas of the hospital, so that would be the majority of work that I have done.

Q If you had to give a percentage of the amount of work that you do unique to the operating

room, what would that percentage be?
A When I do do work in the hospital, I would say it would be -- this is just at the university or --
Q No. Just --
A -- combined?
Q -- your work generally.
A Generally. I would say 70/30, 80/20, 80 percent/20 percent. Outside of the OR is 20 percent in the ORs [sic].
Q You have some familiarity with operating rooms and how they are set up; correct?
A Yes.
Q Are you asked to work on the HVAC systems in hospitals?
A Work on the systems, no.
Q Are you asked to do any evaluation of the HVAC system in the operating room?
A Yes.
Q How many times have you been asked to evaluate the HVAC system?
A Several.
Q Is this for any particular hospital?
A It would be through my work at the

university and also what's listed on my CV for work that I've completed.
Q When you're asked to -- and -- let me try to be clear.
With respect to an HVAC system in an OR, what are you asked to do?
A Evaluate the pressure management of the operating room or the OR suite in general, meaning that there's positive pressure where there needs to be -- and adequate positive pressure.
And also that the particle counts would be, what we consider to be, normal, meaning that there would be a reduction in particles in the OR based on indoor and outdoor controls.
Q Have you ever been asked to look at the filter -- filters within the HVAC system in the operating room?
A I have done particle counting on the downstream side of filters looking for gaps or leaks in the filters in the housing or in the filter brackets that fit in the housing, yes.
Q How many times have you done that?
A Several.
Q The HVAC system in the hospitals where

you've been asked to take a look or check out that system, are you familiar with the type of filter that's in those HVAC systems?
A Typically, yeah. It's a MERV 14 or at least 90 percent efficient filter. And that's what we would expect our particle counts to be in an unused operating room -- that reduction -- in particles.
Q So you understand that ASHRAE has a -- or has a requirement for a MERV 14 filter; is that right?
A I believe that's true, yes.
Q For any of the hospitals in which you've looked at the HVAC system, did any of those systems have a HEPA filter?
A Yes. Some do have HEPA filters or they choose to have HEPA filters.
Q Have you ever been critical of the MERV 14 filter?
A No. If the particle counts are correct and the pressure management is good, then no.
Q With respect to the OR, in addition to the HVAC system, are you familiar with other equipment that is usually in an OR?
A Yes. I've been in many ORs. I -- I've seen

the equipment that is there.
Q Can you identify for me all the types of equipment that are in the OR that blow air?
A That blow air?
Q Yes.
A Well, there is a -- there's probably some computers or laptops that might have a small fan in them. As far as other equipment, anything that has a motor or electric motor would have a movement of some sort of air in it.
Q So the computer and the laptop would have -- that equipment would blow air into the OR; is that right?
A If they are in the OR, yes.
Q In the ORs that you've seen, do you see computers and laptops in the ORs?
A Generally speaking, yes. There are some computers typically in one of the corners of an operating room off to the side or at a bench where somebody would be documenting or writing notes as surgery was going on. Yes.
Q Have you ever noticed the anesthesia machine?
A The cart, yes.

Q Not the cart. The anesthesia machine.
A The anesthesia cart?
Q You may want to call it a cart, but the machine that delivers the gasses.
A Yes.
Q And that has a computer on it; correct?
A Yes, it does.
Q So that computer would have a fan that blows air?
A Yes, it would.
Q What about other equipment?
A That's what comes to mind, just general laptops, computers. And you mentioned the anesthesia cart, yes.
Q Do you know what the electrocautery machine is?
A Yes. It's a specially -- type of machine typically in a special OR.
Q In a special OR?
A Well, it's typically located in an OR and doesn't move from one OR to another, has been my experience.
Q What is the electrocautery machine?
A It's -- I'm not a doctor, so I don't -- I

can't really get into the specifics of it.
Q But you are aware that it is in the OR suites?
A Yes.
Q Does that have a fan as well?
A I don't know for positive if it does or not. I have never worked on one of those machines, so I'm not aware that it actually has a fan. I don't want to say it does and -- I've never taken the cover off or seen that it has a fan, so I -- I don't know.
Q For the equipment that you've named so far, have you ever been asked to check particle counts on those machines?
MS. ZIMMERMAN: Object to form.
You can answer if you -- if you can answer, you can answer.
THE WITNESS: No, I've not.
BY MS. LEWIS:
Q Do any of those machines that you described have an internal filter?
A I'm not aware that they do. I'm not -- I don't deal with laptops and computers as part of my job, so I'm not -- I don't know the answer to that.
Q Have you ever asked a hospital, Hey, I need

to check the particles that are coming out of the computer or the laptop or the other monitors that are in the room? Have you ever asked a hospital that you should -- or said to a hospital you should do that?
A No.
Q What's your reason for not making that request?
A I guess I haven't been asked to do that, No. 1. And, No. 2, it's generally not considered part of my job when I go in and do that type of work is -- looking at individual pieces of equipment unless I've been asked to do that specifically.
I've been asked to look at other pieces of equipment, but not that particular piece of equipment that you've asked me to -- about.
Q What other sorts of equipment have you been asked to look at and do a particle count?
A Not a particle count. I've been asked to evaluate pieces of equipment for contamination, specifically fungal contamination, something that might be growing fungus on it, that type of thing.
Q But you talked before about particle counts and how it's sort of a part of your process. You said not every single time, but it's part of your

process when you go into an OR to do particle counting; correct?
A Yes.
MS. ZIMMERMAN: Object to form.
BY MS. LEWIS:
Q So my question is: When you go in and do particle counting for operating rooms, do you also do particle counts for all the equipment that blows air?
MS. ZIMMERMAN: Object to form. Maybe it would be helpful --
MS. LEWIS: You can answer.
MS. ZIMMERMAN: Yeah --
THE WITNESS: Oh, I'm --
MS. ZIMMERMAN: -- I don't --
THE WITNESS: -- sorry.
MS. ZIMMERMAN: -- know if it would --
THE WITNESS: I didn't --
MS. ZIMMERMAN: -- be helpful to describe --
MS. LEWIS: You can --
MS. ZIMMERMAN: -- how --
MS. LEWIS: -- answer.
THE WITNESS: I didn't know what I was supposed to do.

MS. ZIMMERMAN: That's all right.
THE WITNESS: Could you repeat the question, please.
MS. LEWIS: Can you repeat the question for me.
(Record read back as follows:
"When you go in and do particle counting for operating rooms, do you also do particle counts for all the equipment that blows air?")
THE WITNESS: No.
BY MS. LEWIS:
Q Does the HVAC system blow air into the OR?
A Yes.
Q Have you done particle counting on the HVAC system?
A Yes.
Q Does the HVAC system generate particles into the OR?
A There are some particles that come through, yes.
Q Does the computer monitor generate particles in the OR?
A I don't know the answer to that. I would

assume that they would just because it's an electrical device, yes.
Q That blows air?
A If it has a electric motor in it or a fan, I would say that it probably does. Yes.
Q So you would agree that the computer monitor also blows particles in the air of the OR?
MS. ZIMMERMAN: Object to form.
THE WITNESS: I have never evaluated the computer monitor for that, so I actually don't know the answer to that question.
BY MS. LEWIS:
Q If it blows air -- you've agreed that it blows air; right?
A Yes. My -- my laptop has a little fan on it, so I would assume that it blows air, yes.
Q If it blows air, is it going to generate particles?
A It has a potential to do that, yes.
Q More than potential. Wouldn't it be actual?
A Yes, it could.
Q What about hard drives that are in the OR? Are they going to generate particles?

A Once again, I've never tested an actual hard drive or put my particle counter next to a hard drive, so I don't specifically know the answer to that.
Q But you believe it would?
A I don't know the answer to that. I truly don't.
Q If it blows air, wouldn't --
A If something blows air, it has a potential to have particles that are a result of that action, yes.
Q More than a potential, though; right?
A It could, yes.
Q When you do your particle counting for the hospitals, do you take into account all that other equipment and the particles that they generate into the air?
A Generally when we do particle counting in the hospitals, we do around the room typically at the height of the surgical table or at -- around that area, waist to chest high, yes.
Q You've done particle counting in empty operating rooms?
A Yes.

Q At the time you were retained in this particular case, were you asked to also test particle counts in -- or for other equipment that generated particles in the OR?
A No.
Q Did you suggest that's something you should do?
A No.
Q Do you agree -- even though you said, of course, you're -- you don't consider yourself an expert in microbiology, do you agree that air is not sterile?
A Could you elaborate on that a little further, please?
Q Do you understand that air is not considered sterile?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Air has particles that are in the air that could potentially lead to something that's not sterile, yes.
BY MS. LEWIS:
Q Have you ever heard that you can sterilize air?
A Sterilize air?

Q Yes.
A No, I have not heard that term.
Q So then do you agree that air is not sterile?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Yes, I guess I do if that's the case.
BY MS. LEWIS:
Q By "sterile" I mean free of bacteria. You would agree with that?
A Is not sterile?
Q Air is not sterile, meaning air --
A Yes.
Q -- is not free of bacteria?
A Yes. If that's what you mean, then yes.
Q Why is that correct?
A Because there are particles in the air that could contain bacteria, viruses, or fungal spores.
Q And there are particles everywhere. They are ubiquitous; right?
A Yes.
Q There are particles in this room right now?
A Yes, there are.

Q How many particles are in this room right now?
A I cannot tell you.
Q Thousands?
A I honestly could not tell you without running a particle counter in here.
Q Millions?
A I honestly could not tell you.
Q Particles are in an operating room whether there is a patient in the room or not; right?
A Correct.
Q Particles are in an operating room when the room is empty --
A Yes.
Q -- correct?
Particles are in the operating room when there's no patient warming unit turned on; correct?
A Yes.
Q Particles are in an operating room if a patient warming device, like the HotDog, is -- is in use? There are particles in that OR room as well; right?
A Generally speaking, there are particles in operating rooms, yes.

Q Because there are particles everywhere -- and I know there are different sizes of particles -- there are even particles above the operating room table during surgery; is that right?
A Yes. There are the potential to be particles in the operating room environment, yes.
Q Even over -- even over the operating table; is that right?
A Particles move based on flow of air in a room, yes.
Q And you mentioned that particles can come from the HVAC system because it blows air into the operating room; right?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Yes.
BY MS. LEWIS:
Q So even without a Bair Hugger warming unit being turned on, there are particles that exist over the operating room table; is that correct?
A There could be, yes.
Q Isn't it more than could be; there would be?
A There could or would be, yes.
Q Based on a statement that you wrote in your

report, you would agree that all particles don't carry bacteria; correct?
A Yes.
Could you refer me to what I said in my report that you're --
Q Yes.
A -- referring to?
Q Yes. Hold on. Let me find it.
You said "particles can transmit pathogens." Let me find where you said that.
Page 4 at the bottom. Do you see the first paragraph under Section A, page 4?
A Yes.
Q Where -- you say "Health care professionals and facilities care deeply about particles as particles can transmit pathogens."
Did I read that right?
A Yes. That's correct.
Q So you agree that all particles may not carry bacteria; right?
A Yes.
Q You even say in your report that "Particles can be extremely small"; correct?
A Yes.

Q Do you agree that particles have to be a certain size to carry bacteria?

MS. ZIMMERMAN: Object to form.

THE WITNESS: Yes.

BY MS. LEWIS:

Q One of the figures in your report has the diagram about the various sizes of bacteria, is that right, Figure 1?

A Yes. That was a table that was included.

Q Where did you get that figure from?

A Pardon me?

Q Where did you get the chart from, Figure 1?

A I believe it was from a operating room photograph or picture that was obtained.

Q You mentioned staph aureus on page 6 of your report, and you mentioned that staph aureus has the size of .9 microns; correct?

A Yes.

Q Do you also have an understanding that bacteria doesn't -- a cell of bacteria doesn't travel by itself?

MS. ZIMMERMAN: Object to form.

THE WITNESS: That's -- I've read that in

certain articles, yes.

BY MS. LEWIS:

Q Do you have a reason to disagree with it?

A I do not.

Q What's your understanding of how large a particle needs to be to carry bacteria?

A I don't specifically know how large a particle has to be to carry bacteria.

Q Have you seen sources that say particles that are capable of carrying bacteria are between 4 and 20 microns?

A I have seen that written in literature, yes.

Q Do you have a reason to disagree with that?

A I do not.

Q Based on the resource where you found that statement, and based on your Figure 2 where you list staph aureus being a -- 0.9 micron in size, you would agree that a particle the size of .3, for example, would not contain a cell of staph aureus?

A I don't know that for sure, but based on what's included in the diagram, that would make sense.

Q Do you agree that all bacteria that might be in the air or on a surface might not even be viable?

A That could be possible. Particles in the air are viable and non-viable.

Q Is there a way to detect whether it's viable or not viable from a particle counter?

A The particle counter measures all the particles that come into the counter and treats them as particles counted.

Q The particle counter doesn't make a distinction as to what that particle is; correct?

A Correct.

Q The particle counter doesn't say what's contained on that particle; correct?

A Correct. It counts the total number of particles or however the machine is set up.

Q The particle counter doesn't differentiate whether it's a dust particle or a skin squame or some other type of particle; correct?

A Yes, that's correct.

Q The particle counter doesn't detect bacteria; correct?

A The particle counter corrects particles -- it collects particles. It doesn't detect bacteria.

It collects particles or detects particles. It counts particles in the air.

Q Do you have any knowledge based on what you do for hospitals whether disinfectants, if used to wipe down a surface or is used to wipe up a floor, does that reduce the number of particles?

A On the surface?

Q Yes.

A That's been cleaned?

Q With a disinfectant.

MS. ZIMMERMAN: Object to form.

THE WITNESS: I've read in the literature that that is true, yes. And we have also sampled rooms that have been cleaned or terminally cleaned, depending on the description of the cleaning service, and found that there can be a reduction based on the ability or the -- how well the room is cleaned, yes.

BY MS. LEWIS:

Q Humans also -- we shed particles; right?

A Yes.

Q Or particles shed from clothes?

A Yes.

Q If an OR is cleaned with a disinfectant before a surgery starts and the surfaces are cleaned

and the floor is cleaned before a surgery starts, does that reduce the number of particles --

MS. ZIMMERMAN: Object to --

MS. LEWIS: -- in the --

MS. ZIMMERMAN: -- form.

MS. LEWIS: -- OR?

MS. ZIMMERMAN: Sorry. Object to form.

THE WITNESS: It can depending on how well and efficiently that the room has been cleaned.

BY MS. LEWIS:

Q And by "efficiently," you just mean a person does a good job of wiping down that surface or wiping up that floor?

A Yes. If they are using clean materials and if they are following the SOP of the infection prevention program as far as how to clean the room, then it should reduce, or can reduce, the number of particles on horizontal surfaces, yes.

Q We talked about the filters that are in many hospitals that are MERV 14 filters; correct?

A Yes, you mentioned that.

Q And that's what ASHRAE requires in operating rooms in the U.S. is a MERV 14 filter; correct?

MS. ZIMMERMAN: Object to form.

THE WITNESS: I believe so, yes.

BY MS. LEWIS:

Q Do you agree that a MERV 14 filter is effective in capturing bacteria-carrying particles?

MS. ZIMMERMAN: Object to form.

THE WITNESS: It can, yes. It's efficient at, I believe, 90 percent or a little greater than 90 percent, yes.

BY MS. LEWIS:

Q Do you agree that ASHRAE 52.2 is the standard to test for MERV 14 filter efficiency?

A I -- yeah. If I -- I believe I -- earlier I said it was 152. It could be 52. I don't keep those numbers -- that in my head. I would look it up. I have guidelines at my desk or available to me to look at. So if that's what it is, that's what it is, yes.

Q Have you done any testing pursuant to ASHRAE 52.2?

A As far as?

Q Filter efficiency.

A Generally speaking, as far as testing a filter for its efficiency, no.

Q You don't use ASHRAE standard 52.2 to do

filter efficiency testing?

A Using the standard as far as making sure the filter is up to designer specs is one thing. Testing in the usable environment or the OR environment or out in the -- that is a different thing than I think what you're talking about.

I guess -- I don't understand what you're asking me. If you're asking me if I take a filter in a lab and perform ASHRAE tests on it per the way they design the filter and -- I do not do that. Do I do real life sampling in an OR environment? Yes.

Q All right. So if I'm understanding what you're saying, if you do a test on a filter, you don't follow ASHRAE standard 52.2; is that correct?

MS. ZIMMERMAN: Object to form. Misstates the witness's testimony.

THE WITNESS: I guess I don't understand what you're asking me as far as -- I felt like I just answered the question. I apologize for not following your train of thought. But I -- I don't know, as far as specific ASHRAE standards, if those are followed.

We look at filter efficiencies and look at particle counts in a room based on reduction, based on those efficiencies. So if you're referring to

that, then I guess I do use the standard as far as doing my work when I go out to do work in operating rooms or hospitals.

BY MS. LEWIS:

Q I want you to finish. Are you finished?

A I'm finished, yes.

Q Okay. I understand that there's a specific test for 52.2 standard, and that's what I'm asking.

Do you follow that test on how to test for filter efficiency?

A Do you have the standard in front of you? Could I look at it?

Q I did not bring it with me.

A Okay.

Q But that was -- my question is: Do you follow that standard? Are you familiar with that standard, and is that what you follow?

A I'm not familiar with the standard, no.

Q Okay. We've talked a little bit about HEPA filters. I know I asked you if you had tested on HEPA filters. I'm sorry. I don't remember what your answer was, so let me ask again.

Have you done any testing on HEPA filters for efficiency?

A In my daily work in operating rooms that have HEPA filters, I've looked at the particles or counted particles in the rooms that are HEPA filtered and evaluated those room [sic] based on filtration efficiencies; so in that regard, yes.

Q Do you agree that a HEPA filter does not claim 100 percent efficiency in capturing particles?

A That's correct. It's 99.9999- -- 7 at the end down to .3 microns typically.

Q Are you familiar with any study that has shown that even with the HEPA filter, microorganisms grew, on an agar plate, for example?

A I'm not aware of any study that has that, but ...

Q One of the studies that you listed on Exhibit 6, which is your references and documents considered -- here -- I believe you listed a case titled "Avidan." It begins with an "A."

A This one?

Q Yes.

Did you review that?

A I did not, no.

Q Okay. I'll get it at the next break, but I

want to show you -- in the Avidan study, one of the products tested was the WarmTouch, which is a warming device that has a HEPA filter.

A Okay.

Q But I'll -- at our next break, I'll go get that article for you.

In any of the testing that you've done for the HEPA filter, have you found it to be at 100 percent efficiency?

A I have received particle counts from HEPAs that have been zero at that particular time of the sampling. But generally speaking, there can be some or a few particles collected based on the sampling.

Q Let's talk a little bit about the Bair Hugger system. Since your retention of this lawsuit -- because I think you mentioned that's the first time you've heard of the Bair Hugger; am I right?

A Yes.

Q And so even though you mentioned earlier that you had seen the Bair Hugger in an OR, that's been since you've been retained in this -- to be an expert in this lawsuit?

A I believe so, yes.

Q Based on what you know about the Bair Hugger, you understand that it is a patient warming device that is to be connected to the blanket?

A Yes.

Q And that it's the blanket that is placed over the patient during the operative procedure; correct?

A Yes.

Q So you understand that its intended use is to be for the hose to be connected to the blanket; correct?

A Yes.

Q And you would agree that for testing to be relevant to clinical outcomes in the OR that the testing should be on the device as it is intended to be used?

MS. ZIMMERMAN: Object to form.

THE WITNESS: Yes. We were asked to evaluate the Bair Hugger and to see if it generated particles, so that was part of the test that we did was to evaluate the particles that come out with the Bair Hugger attached to the blanket.

BY MS. LEWIS:

Q And you understand that that's the way it's

intended to be used is with the blanket attached; correct?

A That's my understanding, yes.

Q And so for your test to have some clinical relevance, the testing should be done on the device as it is used in the OR; correct?

MS. ZIMMERMAN: Object to form to the extent that it presupposes what is relevant for the witness to test.

THE WITNESS: The Bair Hugger's intended use is with the blanket, and that's how we tested it, I guess.

BY MS. LEWIS:

Q That's part of your testing, but you also --

A Part.

Q -- tested it without the blanket attached; correct?

A Yes.

Q So my question is: For your test result to have clinical relevance, meaning a doctor can take your test and apply it to patient care and/or treatment, the testing that would be relevant is looking at the device as it is used in the OR; correct?

MS. ZIMMERMAN: Again, object to form. Clinical relevance of -- of any of the testing done by --

THE WITNESS: I'm not --

MS. ZIMMERMAN: -- experts --

THE WITNESS: -- a physician, so I don't know how to respond to that, how they would think about that.

BY MS. LEWIS:

Q If your testing is not done with the device as it is intended to be used, then your test would not be applicable to what happens to the device when it's used in actual surgery; correct?

MS. ZIMMERMAN: Object, again, to form of the question as to relevance to a clinician or to this particular witness.

THE WITNESS: I don't -- the testing that we did was to test the piece of equipment, not to test the equipment as it would be used by a physician.

We were merely testing the equipment in breaking down the components of the equipment to see where particles were generated and how many particles were generated in the process of the equipment being used.

BY MS. LEWIS:

Q And your understanding is the equipment is being used with the blanket attached?

A That's my understanding, yes.

Q Is there a standard protocol to conduct particle testing?

A I'm sure somebody -- somebody has written a protocol for particle testing, but when we were asked to look at the machine, we were asked specifically to look at the particles that are in the machine, that come from the machine, and that go through the machine that would go out through the blanket, and that's what we did.

Q And being asked -- meaning being asked by plaintiffs' counsel -- for -- during -- as your retention as an expert?

A Yes.

Q So you were asked to take the Bair Hugger apart, meaning take the hose apart from the blanket, and test the air coming from the hose as one part of your test, and the other part of your test, looking at particle counts with the blanket attached; is that correct?

A We weren't asked specifically to do that.

That was what we came up with as a means of the step process in evaluating the unit itself and the hose; and then the unit itself, the hose, and the blanket together.

Q Why would you want to separate the hose from the blanket if you understood that's not how it's used in the OR?

A We felt like the breakdown of the hose and the blanket would tell us if particles were getting through the filter media or were internal to the Bair Hugger itself versus if particles were to be caught in the blanket and not escape or to come through the blanket.

So we wanted to basically see the difference, if there was a difference. We were asked to evaluate it, and we thought that that would be a good way to look at it.

Q According to your report, you say you were retained to evaluate whether the -- "whether or not the Bair Hugger forced-air warming system generates and/or omits particles."

A That's correct.

Q So why does it make a difference to you if you're just looking to see if it generates or omits

particles that the blanket is separate from the hose? Why would that matter to you?

A We just felt like it was part of the process to see -- it would give us more data and let us know if there was particles that were generated in the machine or the hose that were not part of the blanket system.

Q So the method that you came up with is not based on any particular industry standard on how to do particle counting; correct?

MS. ZIMMERMAN: Object to form.

THE WITNESS: No. We looked at this as a trial or as a means of investigating the piece of equipment.

BY MS. LEWIS:

Q Who came up with the protocol?

A Myself and Andy Streifel.

Q Which part did you come up with?

A I think it was a mutual effort; that we both came up with this and agreed to this as being a way to look at or evaluate the instrument as an individual and a whole basis.

Q Had you done particle counting on a medical device before this -- before this time?

A Yes. We've looked at other pieces of equipment or other medical devices -- if you want to call them that -- to see if they generate particles.

Q What other devices?

A We've looked at portable HEPA units and other pieces of equipment that I'm having a little bit of difficulty recalling right now, but I know we've looked at other things in the OR or that we've walked by and evaluated.

Q By "evaluated" you mean you did a particle count?

A Yes.

Q And you aren't able to name what other medical device you've done --

A I would --

Q -- a particular count --

A -- have to probably go back and look at some of my reports to -- to see specifically what their names were.

Q When did you do that other testing on another --

A It's been --

Q -- medical device?

A -- done for several years. It's -- it

wouldn't be to the extent that we did on the Bair Hugger.

It would be as part of normal operations in an operating room if I was asked to do an investigation or if I was there on another matter. If somebody were to just ask me to evaluate a piece of equipment, I would have done it. That's why I'm having trouble recalling specifically what the piece of equipment would have been.

Q I thought when you talked earlier about other equipment in the room -- although we weren't talking about medical devices -- you mentioned that you had not done particle counting on any other equipment in the OR; correct?

A The -- the specific equipment that we talked about, yes. The laptops and the disk drives, yes.

Q What other medical equipment that is in the OR were you asked to do a particle count on that -- on that medical equipment?

A I can't recall right now. I'd have to look back. I would be happy to look back through my old reports and see -- list the specific equipment, but I know I've been asked over the years to just briefly or -- evaluate something as part of my work at other

institutions.

Q So you can find that data and pass it on to Ms. Zimmerman?

A It would be probably -- not to the extent it was in a report. It would be listed as a line item in a report, I think, yes.

Q Whatever you have done, you think you still have it recorded somewhere and that could be passed on to Ms. Zimmerman?

A I think I do, yes. If I have an old report -- some of my reports have not been retained from many years ago.

MS. ZIMMERMAN: Counsel, we're happy to work with the witness to identify anything that may be responsive to your requests.

I think the witness and his report and his testimony today has demonstrated that he didn't rely on any of these kinds of things; previous reports that he's done, either in his capacity at the University of Minnesota or his capacity as a retained expert in other matters.

So to the extent that the witness is able to recall, I guess he can provide you that testimony. Other than that, I think it's outside the scope of

the subpoena.

MS. LEWIS: I'd just appreciate no sidebar, please.

BY MS. LEWIS:

Q Will you agree to look for any past reports or written documentation that you have that shows any particle counting testing that you performed on any other medical device?

A I will.

Q When were you first asked -- when were you first retained? What date?

A I don't know if I specifically recall the date that we first met or that Andy brought this up to me.

Andy had met with counsel prior to my meeting them for the first time. I don't know if I specifically recall the first date that I met with counsel. I could probably find that for you if you want to know the exact date that we talked for the first time.

Q If I'm understanding what you're telling me, it was Andy who had the initial contact with plaintiffs' counsel, and then he brought you in --

A Yes.

Q -- to assist him; correct?
MS. ZIMMERMAN: Object to form.
THE WITNESS: To work with me, to work together, yes.
BY MS. LEWIS:
Q What did Andy tell you?
A Andy asked me if I would be interested in helping him evaluate a piece of equipment for a law firm.
Q He gave more details, what the equipment was, and why?
A Not at that -- not initially. He just asked for my availability and my willingness to participate, and that was the initial talk that we had.
Q Was he not able to do this by himself?
A Correct. He asked for assistance just with the testing and the organizing of data, and I -- you know, you'd have to ask Andy about his schedule, but I believe he requested my help just because he felt that it was more work than he could take on.
Q Is it also because Andy doesn't do particle count testing and that's what you do?
A No. We both do particle count testing.

Andy is very proficient at particle count testing or evaluating data.
Q Were you asked to do an evaluation of bacteria counting as part of your testing?
A No.
Q Is that something you don't know how to do?
A Correct.
Q Is that something Andy does or does not know how to do?
A I don't know. You would have to ask Andy how he felt about that.
Q Did you or Andy suggest that bacteria counting should be done as part of your testing?
A We did not.
Q For the particle counter that you used, tell me why you chose that particular particle counter.
A It's a well-respected particle counter that we've used for years, and it's one of the probably leading brands on the market.
Q Had you used it before?
A For several years, yes.
Q You're familiar with how to use it?
A Yes.

Q Let me go back to the question that you put in your report.
You said you were retained to evaluate whether the Bair Hugger "generates and/or omits particles."
Did you mean "omits" or "emits"?
A "Generates" meaning how the particles are either produced from the machine or through the machine.
Q Well, I'm just first starting with the word "omit."
Did you mean "emits" or "omits"?
MS. ZIMMERMAN: Emits.
THE WITNESS: Emits.
BY MS. LEWIS:
Q Emits. Okay.
And then what did you mean by "generates"?
A As part of the internal portions or the internal workings of the Bair Hugger; the blower, the -- the unit that drives the air, that forced the velocity of air through the hose, the other internal components of the Bair Hugger.
Q How did you learn about the workings of the Bair Hugger? Did you look at any document, owner's

manual or something, or service manual?
A We were given a owner's manual, I think, in the box. There might have been one in the box, I believe. Yes.
Q Was there a service manual in there as well?
A I do not recall if there was a service manual. I believe there was, yes.
Q You've got some understanding of the Bair Hugger, the fact that there's the warming unit, there's the hose that the blanket attaches to; correct?
A Yes.
Q You understand that air goes into the warming unit, gets warmed up, and then goes out the hose into the blanket; correct?
A Correct.
Q That's what I'm now trying to understand, what you mean by it "generates" particles. You mean it actually creates them or just -- when you mean "generate," they come out of?
A Both. I think there's internal particles that could be generated as a result of the electrical components of the system. And there's also other

particles that could possibly come through the unit into the hose.
Q Did you do testing on things that could come -- that could be generated within the unit?
A That was why we put the probe inside the hose to test what was coming from the unit itself.
Q I understand that's what you said earlier, is that the particle counter looks at the number of particles and the size of particles; correct?
A Correct.
Q The particle counter can't differentiate what type of particles are coming out; correct?
A Correct.
Q So you didn't do any testing, did you, on types of particles that are coming out; correct?
MS. ZIMMERMAN: Object to form. Misstates the testimony.
THE WITNESS: Correct.
BY MS. LEWIS:
Q I understand from your report that you did three type -- tests; right?
A Yes.
Q You mention that you had two Bair Hugger warming units. And there was a little confusion in

your report, so let me ask you to clarify.
You said you had a model 750 and a model 775; right?
A Correct.
Q Where did you get those models from?
A The old one was the used one; it was furnished to us by counsel. And the new one was purchased from a -- the supplier -- a supplier.
Q The used one was the model 750?
A Yes.
Q And that's the one you got from counsel?
A Yes.
MS. ZIMMERMAN: And if I can clarify, both of these devices were provided by counsel, a new one and a used one, and the --
MS. LEWIS: Okay.
MS. ZIMMERMAN: -- new one was from you.
MS. LEWIS: Okay.
MS. ZIMMERMAN: Your folks.
MS. LEWIS: All right.
MS. ZIMMERMAN: I think that there is a typo that we realized --
MS. LEWIS: Yeah.
MS. ZIMMERMAN: -- yesterday in the

footnote --
MS. LEWIS: Yeah.
MS. ZIMMERMAN: -- because it says --
MS. LEWIS: It says both devices are model 750, but --
MS. ZIMMERMAN: Right.
THE WITNESS: Yes. That's --
MS. LEWIS: Okay.
MS. ZIMMERMAN: Both devices were provided by counsel. One's a 750. One's a 775.
MS. LEWIS: All right.
BY MS. LEWIS:
Q So there -- you tested a 750 --
A Yes.
Q -- model and a 775 model?
A Correct.
Q Both of those models came from counsel; correct?
A Correct.
Q For the used model, what information did you learn about how it had been used?
A Just that it had been used. I don't know where it had been used or how it had been used. There was a brief comment from counsel that it had

been used as a demonstration model.
Q Do you know any more about its use before you got it?
A I do not.
Q Did you think that was important?
A No. I guess it was -- we were just testing the unit so -- just looked at what we were asked to test.
Q And the new one, because it was new, were you informed that it had not been used before at all?
A Correct.
Q Did you look at those filters before you started your testing, take a physical look at them?
A Yes.
Q When you do particle counting generally --
A Uh-huh.
Q -- do you usually test -- for example, if you're doing particle counting in the OR, do you do a first test to see what the particle amounts are in a room, and then do your testing so that you have something to compare?
A We use control samples inside and outside of the ORs to evaluate whether or not there is a

reduction in the amount of particles that we count in the air.

Q But there's no prerun test to look at the number of particles and then to do a subsequent particle count to compare the two?

In other words, if you're concerned about too many particles being in an OR, do you do a particle count in the OR and then do whatever remedial measures you need to do and then do another particle count and then compare the difference?

A I'm --

MS. ZIMMERMAN: Object to form.

THE WITNESS: Typically not, no, if I'm understanding your question correctly.

BY MS. LEWIS:

Q I'm just trying to understand how the process goes; what's a typical protocol to do particle counting.

A Okay.

Q And so I'm trying to see, do you -- in order to compare something, do you have to have, you know, a pre-set of data to compare to the testing data.

A Typically when you're doing particle counting, it's realtime. So the particles that are

in the environment are what you count. So as far as a guideline goes, it would be at that time that you were doing the counting.

Q Is there a certain length of time that you run the particle counter that's standard?

A That's standard? You can run the particle counter in whatever set mode it has. You can count -- there's three or four settings, the volume that you can collect in the particle counter. So -- but as far as being a set amount, unless somebody specifically "spescribed" that -- or prescribed that, then no.

Q Were you asked to run the particle counter for any particular amount of time?

A No.

Q When you do particle counting, do you replicate your testing?

A Yes. You can replicate testing and compare those results, yes.

Q When you do particle counting, do you take into account things that are in the environment that also generate particles or where particles can be found?

MS. ZIMMERMAN: Object to form.

THE WITNESS: The particle counter counts the total number of particles that are taken into the machine, so that's all, I guess, considered as part of the overall testing that we do.

BY MS. LEWIS:

Q For example, if you were doing particle testing in an OR -- although equipment is still in the room, right, usually?

A Uh-huh.

Q Yes?

A Yes.

Q So when you're doing a particle test for that OR, it is counting particles, whatever might be the source of those particles; right?

A Yes. Whatever the particle counter is collecting in the room, those particles, it's all --

Q Whatever's there?

A Yes. At the site of the particle counter, yes.

Q So the particle counter is picking up particles that will be coming from the HVAC system, from personnel in the room, from surfaces on -- the room, from whatever is blowing air; the particle counter is capable of picking up any of that

depending on where the particle counter is placed --

MS. ZIMMERMAN: Object to form.

BY MS. LEWIS:

Q -- is that fair?

A Yes. The particle counter is collecting particles at the site that you were collecting -- or using the instrument.

Q In other words, if the particle counter is in the corner, chances are you're going to pick up more of the particles that are in that particular area of the OR at that time --

A Yes.

Q -- right?

If the particle counter is near the operating table and the probe is there, you're going to pick up particles predominantly in that area; correct?

A Correct.

Q Does the -- so the particle counter can't do a range of particles? Does that make sense, the question?

A The particle counter collects a range of particles at the site that you're collecting particles typically from .3 microns up to 10, which

is in -- the case in our particle counter. But if you're referring to the particle counter collecting particles from another room and if you are in a different room, then no.

Q No. Talking about in the room where you are.

A Okay.

Q Because I understand these particle counters can be handheld; right?

A Yes.

Q So I'm just wondering how wide of a range they will pick up particles, or is it a very limited range?

MS. ZIMMERMAN: Object to form.

THE WITNESS: I don't know exactly how far. I've never seen literature as to how far the assumption is that the particle counter's range is. I've never seen a range in the data from a particle counter or from the product, the owner's manual.

BY MS. LEWIS:

Q So tell me about your first setup, which was -- you called it your first evaluation.

A Sure.

The first evaluation involves -- involved

setting up the particle counter in a clean room and collecting samples, particle counts, and the hose, and running the particle counter through a series of what we consider to be normal operations or modes that the Bair Hugger has. And we counted particles during those modes to see if there was any difference in the particles generated.

Q By "mode" you mean the different temperature settings?

A Yes.

Q The 775 has a different button from the 750 where I think you can have a faster motor, I think, might be the case.

Did you run it in that mode as well, or do you know?

A The modes are listed on the report, as far as -- are you referring to a low, medium, high speed on the fan, or what -- what exactly are we --

Q Does your data in Exhibit 4 list the different modes?

A Yes.

Yes, it does.

Q So it mentions whether it was -- let's see.

A The far column on the left.

Q I see that it shows temperatures.

MS. LEWIS: Let's mark this one as 4A.

(Exhibit 4A is marked for identification.)

BY MS. LEWIS:

Q For 4A -- which the first page says "Old Bair Hugger 12_14_16 Inside Clean Room." I'm looking at page 2, and I'm going to give it back to you.

A All right.

Q You have copies now; right? Let's do it this way.

Page 2 and 3 --

MS. ZIMMERMAN: Counsel, are you marking this as a separate exhibit or just keeping it --

MS. LEWIS: It's -- I'm making it 4A.

MS. ZIMMERMAN: 4A. Okay.

MS. LEWIS: Yes.

MS. ZIMMERMAN: Thank you.

BY MS. LEWIS:

Q Okay. Here's what I'm trying to understand. Since the first page, page 1 of 4A, says "Old Bair Hugger," does that -- by "old" you mean the used --

A Yes.

Q -- Bair Hugger?

So this would be the model 750?

A Yes.

Q For page 4 of 4A, which starts the graph, at the top it says "New Bair Hugger 12_28_16 Inside Clean Room."

A Yes.

Q That's the 775 model?

A I believe so.

Q Okay. I'm looking at page 5 and 6, which looks like your raw data for the model 775, and I don't notice that you make a distinction on the speed of the fan.

You do show temperatures, but not speed of the fan; is that correct?

A Correct. I believe the fan was on. I don't recall what setting it was on, but it was on. We left it on for -- on the same setting.

Q All right. So you were talking about your first evaluation as you described it.

You said you chose to do this testing in a clean room; right?

A Yes.

Q What's the location of the clean room?

A The clean room is at the University of Minnesota and Boynton Health Service on the basement

floor.
Q Employee Health Services you said?
A Boynton Health Service.
Q You said in the basement?
A Yeah. In a -- it's in a -- yeah, a basement level room.
Q It is considered a clean room?
A It's a room within a room.
Q But is it considered a clean room?
A Yes. That's how I've ever heard it been -- described as or called.
Q What's your understanding of why it's considered a clean room?
A Because it was HEPA filtered and it was basically a -- positively pressurized, and it had a downward flow of air coming into the clean room from the ceiling.
Q What room number was this room?
A The room that the clean room was located in is called W37.
Q How large is that room?
A I believe it's 8-by-8-by-8 or 10-by-10-by-10. I believe it's 8-by-8-by-8.
Q Whatever it is is square?

A Yes.
Q Okay. Why did you choose this room?
A Because we wanted to measure only what was coming from the Bair Hugger itself, and we felt that that was the best environment to do that.
Q What do you mean by "only coming from the Bair Hugger itself"?
A From inside the Bair Hugger.
Q You understand that the Bair Hugger intakes air; right?
A Yes.
Q So you're -- so the Bair Hugger is intaking air, so the air that you are testing is coming from inside that room; right?
A Right. Initially, yes, that would be true. We considered -- we wanted to know if the Bair Hugger itself generated particles like we talked about earlier, and that's why we used the clean room.
Q But you understand that the only way the Bair Hugger can output air is to take in the air; correct?
A Right.
Q And it takes in the air from the environment where it sits; right?

A Correct.
Q So you are -- I'm trying to understand how you -- did you make a determination of what particles were, as you call, generated from the Bair Hugger?
A We recorded particles as we went through different settings, and those particles are listed on the table.
Q Before you -- well, not before.
But during your testing did you monitor the particles that were at the inlet filter?
A The inlet filter?
Q Yes.
A No, we did not.
Q Why not?
A Because we felt like once we zeroed the room that we did not need to do that -- the clean room.
Q How did you zero the room?
A Turned it on and basically let it run for a period of time until we got particles in the room that we felt were acceptable as far as clean room standards.
Q Is that reflected in 4A?
A Yes.
So if we -- first, if you can see on the

left, we zeroed the particle counter by putting a zeroing filter on it, and then we took background samples without the clean room being on, then we turned the clean room on and got samples -- or those -- that data, and then we initiated the Bair Hugger usage once we ran through five cycles of the clean room counting with the particle counter -- using the particle counter.
Q How did you zero the particle counter?
A The particle counter?
Q Yes.
A The particle counter comes with a zeroing filter. It's a HEPA filter. And you attach a hose to a HEPA filter, and it collects air through the HEPA filter. It runs it through the machine, the particle counter.
Q And that's called "zeroing the particle counter"?
A Yes. That's what I refer to it as.
Q And how did you do the background?
A The background was just removing the zeroing filter from the particle counter and collecting samples at -- in the room, basically on the same area -- or the same area that we were going to

collect samples from the Bair Hugger hose.
Q The numbers that you have in your columns, the first column with .3 to .5 microns, those are the particle counts that you got from the room?
A Yes.
Q So in this clean room the particle counter picked up 179,171 particles that were in the size of .3 to .5 microns?
A Where are you referring to?
MS. ZIMMERMAN: You want to maybe refer him to the time specified, the time the sample was taken?
BY MS. LEWIS:
Q I'm on the first column, your column for .3 to .5 microns.
Do --
A Yes.
Q -- you see that?
A That is --
Q I'm looking --
A -- 760.
Q I'm looking at your first "Background."
A Oh. I'm sorry. Yes.
Q All right. So for your background, that's how many particles you picked up in that size; is --

A Correct.
Q -- that right?
Correct?
A Yes.
Q And the next column meaning -- there were, for the particle size range .5 to 1 micron, 43,795 particles?
A That's correct.
Q And all the way through for particle size 1.0 to 2 microns, over 30,000 particles; correct?
A Yes.
Q For .2 to .5 -- not .2.
From 2 to 5 microns you picked up 15,752 particles?
A Yes.
Q For the particle size ranges 5 to 10 microns, you picked up almost 8,000 particles; right?
A Correct.
Q And then for particle sizes beyond 10 microns, almost 4,500 particles; correct?
A Yes.
Q You ran four backgrounds, is that what that's saying?

A Correct.
Q And your numbers are reflected on page 2 of 4A?
A Yes.
Q Each background was one minute; is that right?
A Yes.
Q So -- and you said the background is with no -- nothing on?
A Correct.
Q No air?
A Right.
Q When you show now "clean room on," that reflects doing what?
A We turned the clean room on so air was flowing through the HEPA filters in the ceiling.
Q How long did you wait before -- it looks like you didn't wait any time, you just continued with the next minute; is that right?
A Correct. We wanted to show that the clean room was working.
Q So for the first minute with the clean room on, you show for the .3 to .5 microns 760 particles; right?

A Yes.
Q The next minute for that same particle size, 120 particles; for the next minute, the particles .3 to .5, for -- 100 particles; and then the next minute the particles in that same size range were 30; right?
A Yes.
Q And then the last one you say with the clean room on, the particles in that .3 to .5 is 10?
A Yes.
Q So this particular size range of particles never zeroed out?
A Correct.
Q Then you turned on the Bair Hugger; is that correct?
A Yes.
Q So the first minute of the Bair Hugger being on is -- it looks like at 1:57 p.m. Is that what that shows?
A Yes.
Q Let's look at page 1 of 4A, which is your graph. So if these times correspond on your graph to the raw data we were looking at on page 2, the first tall four time slots that we see on your graph, those

are not with the Bair Hugger on?
A Correct.
Q So according to your graph -- excuse me -- the first showing with the Bair Hugger on is again 13:57; right?
A Yes.
Q All right. And at 13:57 in the, again, .3 to .5 particle size, your particle counter picked up 12,182?
A Yes.
Q Right?
All right. Who ran the particle counter?
A Andy ran the particle counter, and I was outside the clean room running the controls.
Q What controls are outside the room?
A The room -- the turn -- the on/off switch for the clean room is in back of the clean room to turn the fan on or off.
Q The picture that is at the bottom of page 8, is that the clean room?
A It's the clean room floor, yes.
MS. ZIMMERMAN: And just to be clear, that's page 8 of his report?
MS. LEWIS: Yes.

MS. ZIMMERMAN: Okay.
BY MS. LEWIS:
Q The photos on page 9 of your report, are those photos from your first evaluation?
A I don't know if they are from the first or the second evaluation, but it is in -- from the clean room, yes. It's depicting where we sampled from.
Q When you did the background on the clean room, what was in the clean room?
A All of the equipment that you see in the picture.
Q Was the -- it looks like a cart or something that the particle counter is sitting on; right?
A Yes. A stainless steel lab cart.
Q Was that stainless steel lab cart wiped down?
A Yes.
Q Before use?
A Yes.
Q Who wiped it down?
A I did.
Q With what?
A I believe it was Sana-Wipe or a alcohol

solution, quaternary-based cleaner.
Q What was your reason for wiping it down?
A Make it as clean as possible before we put it in the clean room.
Q Is there a reason you didn't include that in your report, the steps that you took?
A There was no reason that I did that, I guess. Just felt like it was something that you would -- that I would do irregardless. I didn't think it was a special thing to include in the report.
Q Did you -- let's see. You ran this first evaluation on both --
A Yes.
Q -- models; right?
A All evaluations were done on both instruments in the -- using the same procedures or the same format.
Q In your report on page 11, you have your chart, or your graph, showing the new Bair Hugger inside the clean room, but you don't have a chart of running tests on the old Bair Hugger.
A A chart?
Q Well, you've got a graph showing the data

that you found, but you don't have, in your report, the graph showing the testing that was done on the used unit.
Does that make sense what I'm saying?
A This is the --
Q I'm just -- this just wasn't a part of your report, so I'm saying is this now -- is page 1 of 4A, of Exhibit 4A, the graph for your running the first test?
A Yes. They're all -- it's the graph and then the data, the graph and the data. I guess the reason why it wasn't included is just for ease of reading the report and looking at the graph versus the numbers. The graph is a graph of the numbers, so it's ...
Q I'm just saying that there's no -- there was -- the data that you ran or any data from the test on the used Bair Hugger is just not -- was just not a part of your report, and I'm just wondering why it wasn't.
A The data from the used Bair Hugger?
Q Yes. In other words, on page 11 --
A Uh-huh.
Q -- you show the graph from the model 775.

A Right.
Q But in your report, you don't show the data and the results from the model 750. So I don't know if it's an oversight or ...
MS. ZIMMERMAN: Counsel, if Mr. Buck wants to amend his report to include this --
BY MS. LEWIS:
Q We can make this part of -- we can use this now for -- that's just what I wanted --
A Yes.
Q -- I need to clarify now.
A Yes.
Q All right.
A I'm sorry. That's -- that's a typo or a -- it was missed.
Q Was the filter in for this first evaluation?
A Yes.
Q In both models?
A Yes.
Q Is the same true for when you tested the 775 that you did a -- you did -- you -- zero particle counter, then you did the background, then you did the clean room on, et cetera; right?

A Yes.
Q So the graph that is a part of your report on the top of page 11, those first -- those -- those first bar graphs or those first bars are not when the Bair Hugger was even turned on; right?
A Correct.
Q The Bair Hugger was first turned on at 9:31, which you don't exactly have on your graph in your report. You have a 9:30 and a 9:32.
A The column is there, just the --
Q Okay.
A -- it --
Q The time.
A -- got squeezed out probably because of the printing.
Q All right. So the first time the Bair Hugger was on for the 775 for the .3 to .5 particle size, the particle counter picked up 4,081 particles; right?
A That's correct.
Q I'll need you to do a little bit of explaining on your graph. I'm trying to understand. I understand that the lighter blue color is for .3 to .5 micron particle size; right?

A Right.
Q And then you've got corresponding colors for other categories of particle sizes. My question is: On your graph, you're not -- your graph is not saying that, for example, at 9:31 -- this, again, is for model 775 -- you're not saying that the -- according to your data, you're not saying that you found 10,000 particles, or are you?
A The column is the total. So if you were to add all of the columns together, it should equal out what that column is up to on the left axis.
Q So for 9:31 you've got that you found -- or you detected 4,081 for the smallest particle size?
A Yes.
Q You found 4,431, for .5 to 1. You found -- or detected 3,441 particles for the 1 to 2?
A Yes.
Q Right?
From 2 to 5 microns you found 300- -- you detected 370; from 5 to 10, 90; and greater than 10 microns, 60.
A Correct.
Q So all that comes up to -- what is that? Like, 1,500- -- I mean --

A Like twelve thousand four eight --
Q Okay.
A -- eleven and some change.
Q So is your graph accurate?
A I believe so. It's at just over 10,000, and the next value up is 100,000, so I believe it's correct.
Q But the blue, according to your graph, looks like there are more .3 to .5 micron size, so that's what's confusing. Looking at your graph, not your hard data.
A Oh.
Q Just -- we're trying to understand your graph.
A Right.
Q In other words, you know, did you find ...
A It could be --
Q 7,000 --
A -- just a distortion of the printing. I don't know that the -- the graph should reflect the numbers in the table.
Q And I guess because it's a logarithm, that's what makes it difficult to --
A Yes. I was just going to say that. That is

why.
Q Yeah.
Is there a reason why you chose this logarithm as opposed to some other measurement?
A Just so it would all fit into a graph is the only reason why. Because there are some big numbers at the beginning in the background, so to make it all fit inside a nice -- a graph and have for comparison purposes, it's on a log scale.
Q Did Andy stay in the room during this testing?
A Yes, he did.
Q Why did he stay in the room?
A He monitored the equipment to make sure that it -- nothing happened. Plus, when we went from one setting to another, he switched the settings on the Bair Hugger.
Q This graph doesn't show which setting was which; right?
A It shows the different temperature settings, and the fan was left on on one particular setting for -- the fan was on.
Q On page 2 of Exhibit 4A, what do you mean by "on side," "Bair Hugger on side"?

A We turned the Bair Hugger on its side to see if that made any difference in the number of particles that we recorded.
Just because in the descriptions and some of the diagrams that were sent, the Bair Hugger can be placed on a cart, it can be placed on a shelf or on a -- hung on a pole, so we put it on its side to see if that made any difference in the number of particles that were generated.
Q Why didn't you just put it on the cart?
A I don't know. We just chose to do that just to see what would happen, I guess.
Q So you had it on the floor on its side?
A Yes.
Q Is there any understanding that you have that that's how the Bair Hugger is used in the OR, on its side?
A It's not my understanding that that's how it's used. That was just part of our testing procedure to see if it made any difference in the operation of the Bair Hugger.
Q Were you asked to turn it on its side?
A We were not. That was our way of evaluating the instrument.

Q So the actual graph -- not your data -- but the actual graph doesn't show the difference in temperatures or whether the Bair Hugger is on its side or not?
A The graph shows that the particle counts that were collected during these particular modes or times that are listed -- listed on the table.
Q Anybody other than Andy in the room?
A No.
Q When you're using the probe inside the hose, does -- the probe is still subject to ambient air somewhat; right?
A The tube itself when we -- when the Bair Hugger was on with the fan was -- the tube itself is under positive pressure, so the probe was only measuring what was coming from the Bair Hugger or through the Bair Hugger.
Q And why is that?
A Because it was located -- we put in inside of the tube, and there --
Q And you think --
A -- was positive pressure or air moving from the Bair Hugger through the tube the whole time that we were recording.

Q And so, because of that, you don't think any ambient air got diluted into the Bair Hugger hose such that the probe could have picked up ambient air?
A I don't believe so, no.
Q Does the manual for the particle counter explain one way or the other whether ambient air might dilute the particular air that you're testing?
A Not to my knowledge, no. It's only counting at the point source or at the end of the -- the hose.
Q All right. Anything else that you did with respect to your first evaluation?
A No. It was a pretty simple procedure. We -- we tested and the data is right there either in graph form or in the table.
MS. ZIMMERMAN: Counsel, it's, like, just after noon. I don't know when -- we might want to take a lunch break or --
MS. LEWIS: How are you doing?
We can certainly take a break. If you need to take a lunch break, we can do that as well.
MR. ASSAAD: We should do a lunch break unless you're going to be done in the next 30 to 45 minutes.

MS. ZIMMERMAN: Which I --
MS. LEWIS: I won't.
MR. ASSAAD: I think we're all going to need a lunch break.
MS. ZIMMERMAN: Yeah.
MS. LEWIS: All right. Let me see if this is a good starting point. Just -- and then we can --
MS. ZIMMERMAN: Sure.
MS. LEWIS: -- take a break. All right?
MS. ZIMMERMAN: Yeah.
MS. LEWIS: Let me make sure I can just finish this first evaluation, and then we can --
THE WITNESS: Sure.
MS. LEWIS: -- take a break. Let me make sure.
BY MS. LEWIS:
Q What do you know about the clean room before you went into it? In other words, do you know how it was maintained? What was in there beforehand, et cetera?
A The -- I know that the clean room has been used sparingly for years by different individuals from the School of Public Health.
I don't know about any of the specific

activities that they've used in the clean room. I know that it hasn't been used in -- in a while -- and I don't know how -- exactly "a while" is, but I would say it's probably at least a year or two that it has -- that it's been used.
Q Before you used it, what do you understand -- its use?
A Just by different individuals with different projects or activities that they wanted to use that type of facility or room to conduct either specific projects or activities.
Q Did you check out and investigate how this room was used before you went and used it?
A No.
Q Does the size of the room affect the particle counting?
A The size of the room?
Q Yes.
A For our particular project that we did, I don't believe that it would since we were sampling inside of the hose that the Bair -- that's attached to the Bair Hugger.
Q Based on your graph and your data, you did not replicate your testing for this first evaluation

for either model 750 or model 775; is that right?
A I'm sorry. Could you repeat that? That was --
Q For your first evaluation test that you did --
A Uh-huh.
Q -- you did not replicate your testing for model 750 or model 775; is that correct?
A No.
MS. ZIMMERMAN: Object to form.
THE WITNESS: We replicated the steps in order. We didn't perform separate procedures with the steps. We performed the steps in sequential order at that same time as one test. So you can see where we have five to seven items that are the same, so those tests were performed one right after the other.
BY MS. LEWIS:
Q In other words, the machine just stayed on?
A Yes.
Q You didn't do anything with the machine; you just -- just ran?
A Correct.
Q And I'm saying -- so you did about

43 minutes, according to your graph, for the model 775; right?
A During this particular test, yes.
Q Right.
Did you run another 43 minutes on the model 775?
A No. As I explained, we did the steps -- repeated -- instead of running them separately all the time and having to go through the same setup, we just ran them consecutively.
MS. LEWIS: All right. Let's take a break.
THE VIDEOGRAPHER: We're going off the record at 12:11 p.m.
(Lunch recess.)
(Exhibit 7 is marked for identification; not referenced.)
THE VIDEOGRAPHER: This is Video No. 3 in the deposition of Michael Buck. Today is June 7th, 2017. We're back on the record at 1:07 p.m.
BY MS. LEWIS:
Q Mr. Buck, are you ready to continue?
A Yes.
Q Let's stick with the first evaluation a little bit longer.

You mentioned that your colleague Andy -- Streifel?
A Yes.
Q -- was in the room during the testing of --
A Correct.
Q -- for the first evaluation; right?
A Yes.
Q What was he wearing, if you remember?
A I don't specifically remember what he was wearing. Pants and a shirt.
Q Cap?
A No. I don't believe so.
Q Did you go in the room any?
A Pardon me?
Q Did you go in the room any?
A Not --
Q During --
A -- during --
Q -- the testing.
A -- the testing. Not until it was completed.
Q Did you go in the room during the background?
A I don't believe I did, no. I was outside. Once we set up everything, I was outside the entire

time.
Q Andy was in the room the entire time?
A Yes.
Q All right. He was in the room the entire time even through "zero particle counter" through the end of the test; correct?
A Correct.
Q You were out of the room that entire time; right?
A Yes.
Q So you didn't go -- all right. So -- so he did all the setup, not you at all?
MS. ZIMMERMAN: Object to form.
BY MS. LEWIS:
Q In putting the probe in, et cetera, turning on the particle counter, et cetera.
A I --
Q He did --
A -- helped --
Q -- all --
A -- set up, but we did all of that -- all the equipment was in the room prior to doing any of the zeroing or anything. So I did help with that; like, I cleaned off the cart, put it in the room.

Q What were you wearing then?
A I -- my normal work attire.
Q What is that? Jeans?
A Casual dress clothing.
Q Khaki shirt? I mean, what do you call the shirt?
A Probably -- I would guess an Under Armour or an Oakley shirt with pants and dress shoes.
Q When the clean room is turned on, that's turned on by a switch?
A Yes.
Q How many HEPA filters supply this clean room?
A I know that the entire ceiling is HEPA filtered, so they are interlocked together for the 8-by-8 ceiling that is in the room.
Q Did you take a photo of the ceiling? Is that one of the photos that you might have?
A I don't know if the ceiling would be caught in one of the photos or not. I -- I can't honestly say. I haven't looked at the pictures in months.
Q Where is that switch on the outside?
A It is in the very back of the clean room, so I had to go out of 37 and back in another door of 37.

Q To get to the switch?
A Yes.
Q So the switch is inside the clean room?
A No. It is outside the clean room on an electrical panel or a box.
Q Did you verify the HVAC system in the clean room before you started your testing?
A Yes. We did some initial particle counting in there to verify that the clean room worked, and we also looked at the flow of the clean room.
Q Where is that data?
A I don't know if we included that or not. It was basically our data just to verify that the room worked so we could use it.
Q If it's not a part of here, then I don't have it. It wasn't in your initial report.
A Correct. I -- I don't know that we included that in our report.
Q Is there a reason why?
A It would be just a common procedure before we use the room to ensure that the filters were working.
Q Wouldn't that be important for your data, to show what the condition of the room was before you

started your testing?
MS. ZIMMERMAN: Object to the form of the question.
THE WITNESS: I guess the fact that we ran the clean room as part of the test and the numbers that we got, we felt like that was sufficient enough to show that the clean room was working.
BY MS. LEWIS:
Q Is it your opinion that in five minutes you went to -- nearly a million particles down to 10 --
MS. ZIMMERMAN: Object --
MS. LEWIS: -- particles in the room?
MS. ZIMMERMAN: -- to the form of the question.
THE WITNESS: The numbers --
BY MS. LEWIS:
Q Is that what your data shows?
A Yes.
Q So it's your opinion that you can get rid of 99.99 -- 99.99999 particles in five minutes?
MS. ZIMMERMAN: I'm going to object to the form of the question as argumentative and also as misstating both the witness's testimony and the facts on the document that is in front of both counsel and

the witness.
MS. LEWIS: Are we -- we're not limiting objections to form anymore?
MS. ZIMMERMAN: You have my objection.
THE WITNESS: The numbers of the reduction show on the table that were recorded.
BY MS. LEWIS:
Q Have you ever heard of a clean room going to nearly zero particles?
A Have I heard of that?
Q (No audible response.)
A A clean room is designed with HEPA filtration, and it's based on reduction of particles. There can still be particles present. So I guess to answer your question, I -- I don't know that I've heard of that.
Q Couldn't your data -- there were only 10 particles in the room; is that what your data shows?
A At -- are you referring to --
Q At 13:56. I'm on page 2. I'm sorry. Page 2 at 13:56.
A That was the number that was recorded by the particle counter at the sample location.

Q Do you think that's reliable?
A I think that the room was -- it shows that the room was working, that the particle counter was calibrated and working as well, so I guess the answer to that would be yes.
Q So it's your opinion that you -- that this room nearly became sterile?
MS. ZIMMERMAN: Object to the form of the question.
THE WITNESS: I don't know how that would be related.
BY MS. LEWIS:
Q But you believe this number?
A I see the number. I believe the number, yes.
Q Have you seen any literature that says you can nearly zero out a clean room of all particles except 10 particles in five minutes?
MS. ZIMMERMAN: Object to the form of the question.
THE WITNESS: This sample is taken at a certain portion -- or area of the clean room, and the sample represents the particles that were collected during that sampling event.

BY MS. LEWIS:
Q Where was the probe when you turned on the switch?
A The probe?
Q How did you -- how were you calculating particles when you turned -- when it says "clean room on"?
A The probe was as it was, I believe, in the picture or shortly adjacent to the hose.
Q Do you know which? Was the probe in the hose or not?
A At the time that the clean room was on, I believe that the hose was off and that it was counting particles in the room at that location.
Q Where was the probe, though?
A The probe was attached like it is to the stand, and it was in the hose. The green hose was removed from the particle counter, and the machine was sampling at that point.
Q So the probe was inside the Bair Hugger hose even though the hose was off at this point, but you're saying the probe was inside the hose?
A Yes. The hose was dangling there, and the particle counter was taking samples in the clean room

at that point at that location.
Q With the probe inside the Bair Hugger hose?
A There was another probe attached to the green hose that was on the particle counter.
Q There was another probe?
A Yes. The particle counter works without the hose or with the hose on. The hose is merely an extension of the particle counter.
Q "The hose" being the green hose you're talking about here?
A Yes.
Q And if I'm confused, sorry. Here's what my question is. I'm understanding that this long silver thing is the actual probe; right?
MS. ZIMMERMAN: Which figure are you pointing to, Counsel?
THE WITNESS: One of the probes, yes.
MS. LEWIS: Yeah.
I'm on page 9 of his report.
BY MS. LEWIS:
Q So that's the probe that's inside the Bair Hugger hose; right?
A Yes. That never moved.

Q And the green, smaller hose is the extension hose from the -- from the particle counter to the probe?
A Yes.
Q So that you can put the probe farther away from the actual particle counter; right?
A Yes.
Q So --
A Because the part- -- the probe that is on the particle counter is very small.
Q Right. So you have the extension.
Now, the probe, according to your photos on page 9 of your report, show that the probe is inside the Bair Hugger hose; right?
A Yes. Once the "clean room on" section was done, then the hose was attached to the particle counter and samples were then collected, as you see, from the inside of the hose.
Q I'm still confused. Sorry. Let me try to -- let me try to say it and tell me if I'm right.
When you were doing the "clean room on," the probe was still inside the Bair Hugger hose?
A Yeah. That's why you see it's clamped --
Q Okay.

A -- there, so it didn't move.
Q Okay.
A We wanted it to be in the same location for the entire -- but to verify that the clean room was working, we wanted the particle counter to collect the sample in the environment in the room.
Q That, I understand.
A Okay.
Q But you're saying while you had the clean room on, this probe was sitting -- was inside the Bair Hugger hose?
A Yes.
Q If the probe was inside the Bair Hugger hose at that time, it could still calculate the particles in the clean room?
A The probe that is inside the tube was not used for sampling while the "clean room on" segment was on.
Q There was another probe --
A That is --
Q -- attached?
A -- part of the particle counter itself. The -- the hose slides on and off.
Q Is --

A The -- the probe that is on the particle counter.
Q Is there a picture showing just the probe that was used to detect the particles while you were -- with the clean room on?
A No, not in the report.
Q Is it one of the photos that you have back at your office on your flash drive?
A I do not believe so. I would have to check and see, but I do not believe we have a picture of the probe that was on the particle counter. If you request that, I would be happy to send it to you.
Q Well, I am requesting all photos that you have --
A Yes.
Q -- that you didn't include in your report. If you could give those to Ms. Zimmerman.
A Yes.
Q Okay. How does this particle counter know which probe is counting the particles if you've got two probes connected? Because you said you didn't take a -- loose -- you did not want to take apart the probe --
A As I --

Q -- that's into --
A As I --
Q -- the hose.
A As I said, the hose is an extension of the probe when it's attached, so it's counting particles at the tip of the hose inside the flex tube when it's attached.

And, again, that's -- that's -- you know, Andy was in the room, I was outside the room, so that's -- you know, if you wanted to be more specific than that, you might want to ask Andy that question.

Q Is there a window where you can see inside what Andy is doing?
A There is a window, yes.
Q Were you looking in the window at everything that was going on?
A I was taking notes and looking in the window periodically. I wasn't staring in the window for the whole time. I was mostly collecting notes. Some of those notes that we had -- that you see in this folder were the notes that -- I was jotting down the procedures and how long we were going to spend doing each particular mode or segment.
Q Are there other notes that aren't a part of

Exhibit 4?
A No.
Q You said you were jogging down notes [sic]. Which notes were you jogging down at the time of the testing?
A This would be an example of it, the Bair Hugger Test 2.

What date was that? 12/14. What's the date on that?

Q At the top it says "1_2_17."
A So this would probably be an example of the notes, although it doesn't have the right date on it. I might have put the date on it for the next procedure. I might have forgot to put the date on it, but that would be the example of the type of note that I would have jotted down.
Q So there might be some notes missing from Exhibit 4?
A I don't believe so. I might have just waited to put the date on there at the next trial or the next time we sampled.
Q I'm thinking this is not the first evaluation because in this one -- on this one, this page, it says "filter in," "filter out," and I

understand that wasn't what you did for the first evaluation; right?
A Yeah. So there might be a -- additional notes that would be very similar to that. I thought it was in here.
Q Would you likewise look for those notes and get those to Ms. Zimmerman?
A I can, yes.
Q If I'm -- confuse you, you'll correct me, I'm sure, but here's my question.

The background was where you were looking at the number of particles in the room without the HVAC or the HEPA filters turned on; is that right?

A That's correct.

MS. ZIMMERMAN: This is page 2 of 4A?

MS. LEWIS: Still 2 -- page 2 of 4A, although it goes to any of them, but ...

BY MS. LEWIS:

Q Is there a reason why you did not do another background check before you turned on the Bair Hugger?
A No. I believe that -- and I can't speak for Andy, but knowing that we've worked together for several years, see that he saw consistency in the

numbers and probably didn't feel there was a reason to take another sample.
Q Consistency in what respect? What do you mean?
A Consistency in the size differentiation of the particles, that there was no huge outliers; or that the counts were fairly consistent, that that was the background level that we started the procedure with of particles.
Q Did you talk to Andy about these numbers and whether he believed these numbers were accurate, in particular with this time at 1:56 where it only shows 10 particles?

Did you talk to Andy about that?

A We had communication after I downloaded the data and we looked it over, and he was also in the room monitoring if there was any inconsistencies in the particle counter or anything, and he did not tell me that he was concerned about that number or that he felt it was not accurate.
Q On page 3 of 4A, the last four entries where it says "BH off" -- "Bair Hugger off, clean room on."
A Yes.
Q You can see that your data shows zero all

the way across; right?
A That's correct.
Q So is -- is it your opinion that there were zero particles in this clean room?
MS. ZIMMERMAN: Object to form.
BY MS. LEWIS:
Q I mean, isn't that what you're saying this data shows?
A Yes.
Q There were no particles whatsoever?
A At the time that these sampling events occurred, yes; where the sample location was taken, yes.
Q What's your explanation for there being zero particles?
A Well, it is a HEPA-filtered environment and that can happen. You can get samples like that from time to time or during periods of sampling, especially in that type of an environment.
Q And to turn the Bair Hugger off, Andy had to go -- Andy was still in the room, and he had to turn it off; right?
A Yes.
Q Andy is moving about in the room; right?

A I think he probably reached down or to the side and turned it off, yes.
Q You agree that people shed particles all the time; correct?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Yes, people can shed particles.
BY MS. LEWIS:
Q We can shed particles from the skin; correct?
MS. ZIMMERMAN: Object --
THE WITNESS: Yes.
MS. ZIMMERMAN: -- to form.
BY MS. LEWIS:
Q We shed -- clothes shed particles; right?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Clothes can shed particles, yes.
BY MS. LEWIS:
Q And so while Andy is in this room moving, even just to turn off the machine, there were zero particles?
A At the sample location point, yes.
Q Where was the sample location point?

A The same place it is on the tray where the particle counter was located. Andy was a proximate distance away from that. I don't know exactly how far. He would know better than me.
Q So there could be other particles in the room that this particle counter just did not pick up?
A Yes.
Q And that's true throughout the entire -- that's true throughout the entire test; right?
A Yes.
Q The fact that your data doesn't show particles for these last four minutes from 2:18 to 2:21 p.m. doesn't mean that there were no particles in the room; right?
A Correct.
Q It just means the particle counter, at its location, did not detect any particles; correct?
A Yes.
Q The same is true back up on page 2 of Exhibit 4A where we were looking at the time period 1:56 p.m. where it shows 10 particles at .3 to .5 microns.
Do you see that?

A Yes.
Q And all the way across, the rest of those particle categories are zero. That doesn't mean particles didn't exist, that just means at the location where the probe was placed, it did not detect particles; correct?
A Yes.
Q You would agree with me that chances are particles were in the room during the time you were doing this first evaluation; correct?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Yes.
BY MS. LEWIS:
Q The question just is -- we don't know how many because the probe was not at a place where it picked up any particles; correct?
A Correct.
Q All right. So for both the model 750, which was, as you have on your notes, the old Bair Hugger; and the model 775, which, as your notes say, is the new Bair Hugger; you followed the same process?
A Yes. Each procedure -- we did three procedures, and each one was a mirror image or a replicate of the previous one.

Q Let's talk about your second evaluation based on your report. I think it starts on page 11 of your report.

Can you describe what you did for your second evaluation.

A Sure. We used the Bair Hugger, and this time we set the Bair Hugger outside the clean room and ran the hose inside the clean room.

Q Explain that.

A The Bair Hugger was sitting on the ground on a cement floor and the door was propped open, and the hose, the supply hose, that would run to the blanket was ran into the clean room.

Q Why did you do that particular protocol?

A I believe we were looking at the particles that would be generated from the Bair Hugger in a dirtier environment -- if you want to call it that -- versus a cleaner environment.

Q What was outside the door?

A A room, W37.

Q What type of room is Room W37?

A It's a room that used to have two or three smaller clean rooms, like the one we were using, and general -- some general storage, departmental

storage.

Q So it's a storage room?

A It's part of the -- part of its usage was a storage room, yes.

Q Is that comparable to an operating room?

A It depends on the level of cleanliness of an operating room, but it was a hard surface floor. But, generally speaking, it wasn't a MERV 14-filtered room.

Q So the Bair Hugger warming unit is sitting out in this room that doesn't have MERV 14 filtering?

A Correct.

Q You had it on the floor?

A Yes.

Q This was a storage room?

A Yes.

Q It was next to the clean room --

A Yes.

Q -- that you're calling a clean room -- and the door was propped open so that the hose could connect the warming unit to being inside now, the clean room; right?

A Correct.

Q What was propping open the door?

A I believe the door was being propped open by the -- the positive pressure from the clean room. So the air was blowing out the door from the clean room when we had the clean room on.

Q That was keeping the door open?

A Yes.

Q Wouldn't the positive pressure in the clean room force the door close?

A No. It was a positive pressure environment, so the air is coming in through the ceiling and pushing out the clean room.

Q Out into the storage room; right?

A Yes, through --

Q And that --

A -- the door.

Q -- positive pressure in the clean room doesn't close the door?

A No. It opens it. It has -- the air has to have a way to escape. There is a return in the room, but it's -- there is -- you're moving a lot of air inside this clean room.

It's like an environmental test chamber, so the -- I believe the amount of air equates to -- I

think it was 81 linear feet. And there was -- I forget the number of air changes in the room, but it's a lot. So there's a lot of HEPA-filtered air coming from the ceiling and pushing out of the room.

Q There is an exhaust for the air to exit this room, this --

A There's --

Q -- clean room?

A -- a return that's also filtered that goes through the floor.

Q So is that why the floor looks the way it does?

A Yes, so --

Q So that's --

A -- air goes --

Q -- a --

A -- air goes down.

Q So there's not a exhaust fil- -- not exhaust -- I think exhaust might be the way -- but just a -- a way for the air to exit; there's nothing on the side, it's -- it's all on the floor?

A Besides the door, yes. And you can either lock the door and keep that air -- keep the room positively pressurized or you can let the door be

unlocked and it will push the door open to a certain extent.

Q All right. So you've got it set up where the warming unit is outside, and the end of the hose is on the inside of the clean room; right?

A Uh-huh.

Q Is the probe set up the same?

A I believe so, yes.

Q Is it on the same cart?

A I believe so, yes. It might have been in a slightly different configuration, but I believe it was on a stand. It might have been either next to the cart or on the cart. I forget which. I was not in the clean room. I was outside.

Q Was this done on the same day?

A 12/20 is the date of -- are you talking about the old Bair Hugger?

Q Well, I'm talking about your second evaluation, so that's what I'm asking you to walk me through, so --

A It was -- the first one, we did it in the same sequence, old Bair Hugger, new Bair Hugger, and this one was done on 12/20, I believe, and the new Bair Hugger was done on January 2nd.

Q Where are the photos from 12/20?

A The photos? I don't think I took photos every time. I took the photos of the initial setup or -- I didn't make it a point to take photos every single time. It was -- the setup is -- the photos are just basically showing where we had the probe during sampling. It's ...

Q No -- there are no photos in your -- attached to your report for this second evaluation showing the setup where the warming unit is outside the door and the hose is inside the clean room.

So do you have photos of that setup?

A I -- I don't know for sure. I think so. I believe I do.

Q They will be included in the flash drive that you already have; correct?

A All the photos that I have will be included, yes.

Q All right. So Andy was inside during the entire second evaluation?

A Yes. We kept it the same for consistency purposes.

Q Okay. Was he dressed differently for this test?

A Since it was a different day, I believe he probably had some different clothes on, but probably the same type of clothes.

Q Street clothes?

A Yes.

Q The charts or the graphs that are on page 12 of your report, are these the graphs from the second evaluation; right?

A Yes, they are.

Q Okay. So this is where you had the filter in and filter out; right?

A Yes.

Q Why did you want to test the filter out? You understood that the filter was supposed to be in during use of the Bair Hugger; correct?

A Yes.

Q Why did you want the filter out?

A We wanted to see what particles were generated as a result of the filter being out so we could compare it with the filter being in.

Q How would that be a difference?

A Just the number of particles that were generated as a result of not having the filter in place.

Q But you were talking about generated. I thought what you meant by "generated" is it was --

A Either in or through the machine as a result of the machine running.

Q Which one was done first, the filter in or the filter out?

A I'd have to look at my notes.

Filter out.

Q Okay. Let's look at -- are we on page 8 of 4A; is that right? Probably?

A Yes. Number -- I think it's page 8 -- 8 and 9.

Q And 9. All right.

All right. Why for this test were there four minutes of "zero particle counter," and when you did the first evaluation, there was just one?

A I couldn't honestly tell you that, other than the fact that he basically wanted to make sure that the particle counter was zero before we started. Andy chose to do that. He was in the room.

Q Does Andy know more than you do about your testing?

A About this particular testing?

Q About the testing that you did on the Bair

Hugger?
A I'd say we know equal amounts regarding this testing; however, Andy has many more years of experience in hospital environment type of activities because --
Q Than --
A -- he worked --
Q -- you do?
A Yes.
I've had different job responsibilities, and he has -- he's in his mid to late 60s. I'm 51. So he's worked at the university a lot longer than I have.
Q Did he help write the report?
A As I said before, I wrote the report, and he reviewed it, peer-reviewed it, and had some comments to make; but for the most part, I wrote the report.
Q What comments did he have to make about it?
A I don't specifically recall what comments he made. There was some verbiage that he corrected me on. I might have described something in my particular terms or views, and he might have said, "It would be better if you wrote this" or "I think this is better," but I don't specifically, word for

word, remember what that was.
Q Why is it that he -- that you are -- since you both did it, why is it that you are the expert and not Andy?
MS. ZIMMERMAN: Object to the form. And I'm going to instruct the witness not to answer.
MR. ASSAAD: Don't answer.
MS. LEWIS: Are you following their instructions?
MS. ZIMMERMAN: Yeah.
THE WITNESS: Yes.
MS. ZIMMERMAN: Yeah. His attorney has instructed him not to answer.
BY MS. LEWIS:
Q The data that you collected, would your answer be the same with respect to those time periods where your chart shows zero particles, that that reflects that the probe was placed at a point where it was not detecting any particles?
A Yes. At that particular time, the sampling indicated that the particle counter did not detect any particles.
Q But your data is not saying that there were no particles in the room; correct?

A Correct.
Q So for four minutes Andy had the filter out, and then for six minutes he had the filter in; right?
MS. ZIMMERMAN: Object to form.
THE WITNESS: That's correct; however, the Bair Hugger was outside, so I took the filter in and out.
BY MS. LEWIS:
Q Oh, okay.
A Okay.
Q All right. So you did that?
A Yes.
Q All right. So you had it -- you had it out for -- same, four minutes you had it out, and then you put it in?
A Yes.
Q And the particle counter continued to run for six minutes; right?
A Yes.
Q Okay. Page 9. What do you mean by "outside control"?
A When we were completely done, we took the particle counter outside in the hallway of W37 and

collected these samples as a background sample in the building.
Q In the storage room?
A Yes.
Q Like the first evaluation, for this second evaluation, you did not test the amount of particles and size of particles going into the Bair Hugger unit; correct?
A Correct.
Q What did you know about the cleaning of this storage room before you started your test?
A I do not know about the cleaning of the -- of the room.
Q How large was this storage room?
A I would say it's probably 15-by-60 or 80 maybe and approximately 8- to 10-foot -- or 9- to 11-foot ceilings.
Q What all was in the room?
A They said -- there was storage equipment in there, some boxes, papers, some equipment that had been stored there, miscellaneous items.
Q Large equipment? What kind of equipment?
A I wouldn't say any of it was large equipment. It's smaller equipment.

Q Electronic type equipment?
A There could have been a couple of computer screens maybe or some keyboard trays, things like that.
Q Shelving with materials and equipment on it?
A The shelving -- I believe the shelving had Banker Boxes and files in it, and some of the equipment was maybe located at the other end of the room. Most of it was in a -- a closed-door metal cabinet.
Q Okay. For this chart on page 7 of 4A, you still have a logarithm on your y-axis.
A Yes.
Q And you ran this test for how many minutes? Was it 46 minutes or so, I think? 46 minutes?
A Yeah, from 13:27 to 14:24.
Q And as your chart shows on page 8, the majority of the particles are below 2 microns; is that right?
A On all of page 8?
Q Let's start with -- with the Bair Hugger on at 13:43, you've got 27,000 that are in the size range of .3 to .5.

A Yes.
Q That's --
A Oh, now I see what you're saying.
Yes, most of the particles are.
Q Okay.
A I was just confused as to where -- what you were talking about.
Yes, that's true.
Q All right. So -- in fact, I can't do percentages quickly, but I don't know, what, 80, maybe 90, percent of those particles are at 2 microns or below?
A Yes. I would say I'm not the best at in my head either, but yes, I would say that's the -- that would be a good guesstimation.
Q And for all of the minutes where the Bair Hugger is on -- let's start with ambient room -- the ambient air flow. That's the case with all four of those -- you ran it for five minutes, but the first minute you didn't have hardly any particles; right?
MS. ZIMMERMAN: Object to form.
BY MS. LEWIS:
Q Do you see the "Ambient Bair Hugger" at 13:42?

A Yes.
Q You've got zero, zero, 10, under -- at -- 10 at between 1 and 2 microns; 10 between 2 and 5, et cetera.
A Yes.
Q And then the rest -- the other four minutes with just the ambient air, again, what, greater than 90 percent of those particles are 2 or below, 2 microns or below?
A Yes.
Q Okay. Is that also true with the Bair Hugger on at 38 degrees centigrade also?
A Yes, it is.
Q That seems also true with the filter out and the filter in; am I right?
A Yes.
Q Okay. Where it says -- on page 9 of Exhibit 4A where it says "Bair Hugger in clean room," is the Bair Hugger still running or not?
A Yes. The Bair Hugger was moved into the clean room after the filter was put back in so we could see what the difference would be.
Q You had the Bair Hugger now in the clean room for about five minutes; is that right?

A Yes.
Q And, likewise, for these five minutes, over 90 percent of your particles are 2 microns or below?
A That's correct.
Q When you did this outside control that you're telling me on -- at the bottom of page 9, the Bair Hugger warming unit was still in the clean room; right?
A Yes. The experiment had been, for the most part, shut down. The only thing that was taken outside was the particle counter itself.
Q All right. Looking on page 10 of 4A. This is now the model 775; yes?
A Yes.
Q And did you follow the same procedure, just now on the different model --
A Correct.
Q -- unit? All right.
According to your graph, it still looks like the overwhelming majority, greater than 90 percent, of your particles are still .3 to .5 microns and below -- 2.0 microns or below; is that right?
A That's correct.
MS. ZIMMERMAN: Object to form.

BY MS. LEWIS:

Q Just like in the first evaluation, the second evaluation where you have separated the Bair Hugger from the blanket is not the way it's used in the operating room; correct?

A Correct.

Q With respect to understanding the clinical relevance of your testing, you would agree that this testing doesn't have clinical relevance to how the Bair Hugger will actually be used in the operating room; correct?

MS. ZIMMERMAN: I'm going to object to form. You're going to get to ask that question of clinicians in this case, I'm sure, as to what they think is clinically relevant.

BY MS. LEWIS:

Q You can answer.

A I don't -- I don't have an opinion on that. I'm not a physician.

Q When you ran the new Bair Hugger or the 775, you also ran it for about the same amount of minutes as you did the 750; correct?

A I think they're all -- approximately, yes.

Q One looks like 46, and the 775 looks like

about 44?

A Right.

Q Did you replicate this second evaluation? In other words, run it again, do another 44 minutes?

A No, we did not. We ran the same test repeatedly -- like the question you asked me about the first procedure, the first test -- consecutively before we moved on to a different mode or a different setting.

Q Now let's talk about your third --

A Okay.

Q -- evaluation.

And according to your report, this third evaluation was with the blanket; right?

A Yes.

Q The photo that's on page 13 of your report and, of course, the photos on page 14 and 15, this was the room where you did the testing with the blanket; is that correct?

A That's correct, yes.

Q What room is this?

A This is a simulated operating room at a manufacturer in the Twin Cities.

Q Who is the manufacturer?

A Precision Air.

Q They call this a "simulated OR" you said?

A I believe so. There -- it's the room they have set up to show their products or show --

Q I didn't mean to cut you off. Go ahead.

A It's the room that they have for demonstration purposes and to show the products that they sell or that they have for sale.

Q This is not a clean room; right?

A No. It's a simulated operating room.

Q How large was the room?

A It's a fairly large room. Probably 20-by-20 or 20-by-30 maybe. I don't know exact, but that would be a fairly good guesstimate.

Q What was in the room?

A There was a table, a surgical table, if you want to call it that, that would simulate a surgical table; a stand next to it -- or at the foot of it with a -- some instruments that were recording. We did not use those instruments; those are theirs.

And then I see a -- a shelf -- shelving unit over in -- against the wall; and in the corner of the room, I think there is a mannequin of -- of a torso.

Q It's probably shown on the photos in 14 and

15 of your report; right?

A Yes.

I'm sorry. Did I skip ahead?

Q No.

A Okay.

Q I'm just trying to now look -- because I see something in the corner of the room on -- in the photo on page 15.

But do you have any other photo that shows --

A That's just a different angle. That's looking at it from a different angle.

Q Correct. But it shows a different corner --

A Yes.

Q -- than the photo on page 14.

A Correct.

Q Are there photos that show the rest of the room?

A There are maybe a couple of additional photos. I don't know if they show any different parts of the room or not, but there are some -- a couple of different photos, probably duplicates of these photos. I just picked what I thought was the best one or had the steadiest camera shot.

MICHAEL WAYNE BUCK

Q Is there any other equipment in the room that's not reflected in the photos?
A Not that I recall.
Q Why did you choose to go to Precision Air?
A We wanted to test the Bair Hugger with the blanket on in a OR type of setting or operating room type of setting that would be similar to where it would be used, so we contacted them and asked them if we could use the room.
Q Does this room have boom lights above?
A I don't know if it had boom lights. I would have to check. I don't recall.
Q Did it have an anesthesia machine in there?
A I don't believe so.
Q Did it have an electrocautery machine in there?
A I don't believe so, no.
Q Did it have stainless steel tables where people place instruments?
A I don't believe so, no.
Q Have you -- well, you have been in other ORs. This room is larger than the typical OR in a hospital; correct?
MS. ZIMMERMAN: Object to form.

MICHAEL WAYNE BUCK

THE WITNESS: This room is slightly larger -- or larger as you -- if you want to call it that -- than a typical OR; however, modern day operating rooms are getting larger and larger, especially specialty ones like hybrids and those types of rooms that have MRIs or other equipment in them.
So it's smaller than older ORs that I've been in in different hospitals; and it's probably the same size, or maybe even smaller, than some of the modern ORs that some people are building or specialty ORs, so it's kind of right in between.
BY MS. LEWIS:
Q This room looks pretty large to me. It's --
A It is -- it is pretty large. It looks bigger than it is without tons of equipment in there.
Q Does this room have a MERV 14 filter in it for its HVAC system?
A I believe so, yes.
Q You believe so or --
A I know --
Q -- did you ask --
A -- so, yes.

MICHAEL WAYNE BUCK

Q -- them?
You asked them about that?
A Yes. We had them set it up at typical operating room settings. I think it was giving us 20 air changes an hour.
Q So this simulated room can -- has the capability of having air changes --
A Yes.
Q -- in this room?
A Yes.
Q Did you get any documentation of the type of filtration? In other words, did you ask for documentation that this is MERV 14?
A We took them at their word.
Q Did you ask them to bring in an anesthesia machine to set this up so that it looked more like an actual operating room?
A We did not.
Q So this room did not have the other equipment that a typical OR, actual OR, room would have with other equipment that blows air in the OR; correct?
MS. ZIMMERMAN: Object to form.
THE WITNESS: No, it did not.

MICHAEL WAYNE BUCK

BY MS. LEWIS:
Q You would agree that this setup, even though it's a simulated OR, is not the same as an actual OR?
A That's correct.
Q Do you know if the ACH rate affects the number of particles in the room?
A The more air you bring into the room, the better the pressure, the more filtration is going on with that air coming into the room, so it could have an effect on the number of particles in the room.
Q When you got to the room, you and Andy were present as well?
A Yes.
Q Did Andy run this particle count as well?
A I believe we both did at that time because we were both in the room.
Q Why did you choose to put -- to do this in the simulated OR rather than the clean room?
A Because we wanted to simulate the -- an operating room because we were using the blanket at the time, and we wanted to measure the particles that were coming out of the blanket since we had previously measured the particles that were coming in and through the machine.

Q And the blanket is in a container; correct?
A That's correct.
Q Could you have not taken this container into the clean room?
A Could have, yes.
Q Why not do this third examination in an actual OR?
A We discussed that, and we just didn't feel like it would be appropriate or that we would want to get permission from a hospital to do that since we had access -- or we had permission from this company to use their simulated OR.

We weren't looking at necessarily all the equipment in the OR. We were specifically looking at what was going to come out of the blanket under operating room conditions.

Q But the -- the blanket in the container, that's not operating room conditions; right?
A No, it's not operating room conditions, but that allowed us to measure the particles that were coming just from the blanket.
Q That's what I'm saying. You could have done that in a clean room or an actual OR room; right?
A We could have done the same thing in a clean

room or an operating room, yes.
Q Did you -- do you have any information on when this room was last cleaned?
A I do not.
Q Do you have any information on when this floor was last cleaned?
A I do not.
Q You put the Bair Hugger warming unit on the floor for this third evaluation; correct?
A Correct.
Q Where did you get the container from?
A I believe I purchased it from Menards in --
Q How --
A -- Blaine.
Q How large is it?
A I still have the container, but -- it was the largest one that I could find.
Q Did that mean that the blanket was not totally open?
A Not totally, no.
Q It was -- part of it had to be turned over or something?
A Yes.
Q Okay. So I'm looking at your photo, and

you've got the Bair Hugger hose -- you had to cut a hole into the container?
A Yes.
Q All right. Did you do that, Andy did that, or someone else?
A I did that.
Q All right. It looks like some sort of tape around the hole?
A Yes.
Q Was there any extra space around that hole in the hose?
A No. I taped it up to the best of my ability with some 3M surgical tape.
Q Where actually is the probe inside the container?
A The probe is stuck through a hole inside the container. If you look at ...
Q It wasn't a close-up.
A Yeah. It would be right where you see it on page 15.
Q Uh-huh.
A The probe would be sticking in that area, in the middle of the container.
Q The hole is going through the lid of the

container; right?
A I believe it was just under the lid, yes.
Q The probe is under the lid?
A Yes.
Q Was there a hole made into the side of the container for the probe to go through?
A Yes.
Q You made that hole as well?
A I did.
Q Did you tape up that hole?
A Yes. It was very -- it -- it wasn't as loose as the -- or as -- but, yes, I did.
Q Okay. All right. So you've got this set up where you've got the blanket -- this is the upper blanket, the upper body blanket, as far as you know?
A Yes.
Q It's the more narrow one.

Okay. So it's in the container, you've got the hose into the side of the container, and there was something that was confusing about your report.

Did you only test the blanket inside the container or also outside the container?
A Only inside. We were concerned about particles that would come out through the blanket.

Q All right. So you've got it connected. Now what do you do -- did you do? You've got the probe in, you've got the blanket in.

Who put the blanket in?

A Andy and I.

Q And you -- both of you or --

A Yes.

Q Why?

A I guess I was just helping. He was at one end, I was at the other. We were trying to fit it as best we could into the container.

Q It's a little squished?

A It was a little squished, yes.

Q Because there wasn't enough room in the container?

A Correct.

Q Was this a blanket that you opened up from its container from the plastic wrap?

A Yes.

Q So this was not a blanket that had been used before?

A No.

Q Okay. So you opened it up and got it in here as best you could; right?

A Yes.

Q Did you wear any gloves or anything when you put it in?

A I don't believe so, no.

Q All right. So it's in. Now what did you do?

A We went through the testing process that we had laid out where we zeroed the particle counter --

Q Uh-huh.

A -- and then we took samples inside the room, plus the box.

Q Explain that. Where it says "background room, plus box," what --

A So --

Q -- does that mean?

A -- we took background samples inside the room, and then we took samples inside the box. The room -- we took samples inside the box in the room for background. Because, ultimately, what we wanted to know was when we turned the Bair Hugger on, what particles came out of the blanket.

Q And you can't sterilize the container; right?

A The container was wiped down with the same

cloth or material cleaning agent that I used to wipe the carts down with in our initial experiments in the clean room.

Q You don't put that in your report that you wiped down the container?

A No. It would just be, I guess, something that we would do regularly as a means of doing work, this type of work.

Q What did you wipe down the container with?

A I believe it was a wipe. I'd have to check and see. It was a standard type of cleaner wipe that would be used in health care settings.

Q Was it a disinfectant or just a wipe?

A It was a disinfectant of some sort. I don't exactly know what the claims were on the side of the container. I could furnish you with that information if you would like.

Q Where did you get the disinfectant from?

A I believe it was from our storage -- not storage -- but our lab area where we have wipes where we clean countertops, those types of things.

Q Your lab in your -- your office?

A In our building, yes.

Q But you were in Precision Air, so I'm saying

you --

A Took the wipes with us.

Q You brought the wipes with you?

A We had supplies, tape, wipes, utility knife, those types of things.

Q You agree that you did not sterilize the box, the container; right?

A I wiped it down. I did not sterilize it.

Q Because you can't sterilize; correct?

A I wiped it down with a -- disinfecting wipes. I did not sterilize it in terms of -- I don't -- I don't know exactly what you mean by "sterilize."

Q You didn't get rid of all the bacteria in the container; correct?

A No.

Q You can't say how much bacteria or even particles were in the container when you finished wiping it out?

A I cannot. We can only go by what the particle counter counted during our initial testing or during the phases of the testing before we turn the Bair Hugger on.

Q And so -- all right. And your putting in

the blanket into the container, did that generate particles?
A I don't know if it did or not.
Q Probably did?
A We could have put particles in the container as we were putting the Bair Hugger in there -- or the blanket in there. That's a possibility, yes.
Q Isn't it a probability?
A I -- there were particles in there when we counted so that's a possibility, yes. It could be a probability, yes.
Q It was probably [sic] that you added particles?
A I can't say for sure, but it could be since we are humans and we were wearing clothes and we were manipulating a blanket.
Q According to your graph, you ran the test for 24 minutes; is that about right?
A I believe so, yes.
Q Why 24 minutes?
A I think because we felt that that was an adequate time to complete the testing that we wanted to do, which was basically see if particles came out of the blanket while the Bair Hugger was running.

Q But since you did 44 and 46 minutes with just the hose, why just 24 minutes with the blanket?
A There weren't as many modes or as many procedures that we wanted to test. We wanted to basically test if particles came out of the blanket when the Bair Hugger was running.
Q So you didn't care what temperature it was like you did when you were just looking at particles at the hose?
MS. ZIMMERMAN: Object --
THE WITNESS: I --
MS. ZIMMERMAN: -- to form. Misstates the witness's testimony.
THE WITNESS: We basically felt like the Bair Hugger was on and pushing particles out or it was operating that we felt like we were testing what was going to come out of the blanket.
BY MS. LEWIS:
Q You already had an idea?
A No, I did not.
Q This -- the two graphs for your testing on the blanket has a different y-axis --
A Yes.

Q -- right?
Let's say, for -- for example, on the top of page 16 of your report, which is the model 750, your y-axis only goes to 14,000; correct?
A Correct.
Q Your other graphs you went -- for one of them it went to 10 million; right?
A In previous tests?
Q Well, the old for the 750 outside clean room, your logarithm is 10 million; right?
A I -- what page are you on?
Q On page 12.
A Oh, okay.
Q I hope I counted it right. I think so.
A One, two, three, four, five, six -- seven zeros, yes.
Q So that logarithm is 10 million?
A Right.
Q The log at the bottom of page 12 where you're also doing the outside clean room, you only used a logarithm at the top on the y-axis of 1 million; right?
A Yes.
Q Why didn't you use the same logarithm for

both so that you could compare sort of apples to apples?
A The numbers don't go past -- except for one particular value on the top graph -- go past a million; so, therefore, I think the other -- the chart just automatically added another value above that. But if you look, the values are all -- are the same for both graphs on the y-axis.
Q On the y-axis --
A One --
Q -- I'm saying --
A -- 1; 10; 100; 1,000; 10,000 -- I mean --
Q Uh-huh. But you could have plotted your lower graph on a 10 million logarithm graph so that they would be the same -- so you could, again, compare apples to apples.
A Right. That -- that could have been done, yes. In fact, I -- I did not manipulate that that way. That was just how the computer decided to do that. I'm assuming because of this one value in the middle, but --
Q Being above?
A Yes. I believe it added another segment to the graph. I did not intentionally do that.

Q The graphs for the blanket test, again, your logarithm is also different for both -- not your logarithm, but your y-axis --
A Yeah --
Q -- is --
A -- that is not a log. I don't believe that --
Q No. These --
A --- to be a log --
Q -- aren't logs.
A -- scale. Yes.
Q It's not a log scale. It's -- it's a linear scale, I think is what it's called, but --
A Yes.
Q -- again, for one graph, you know, you go to 30,000; for the other graph, you only go to 14,000.
A Yes. I believe that was done by the computer program as well.
Q But you could have changed that and put it such that they would have both been on a 30,000 graph, right, so that you could, again, compare apples to apples?
A Yes. The -- the graph could be done the way you prescribe it or want it. That's something that

could be done, yes.
Q I'm going to show you what I've done, and you can tell me if it's accurate.
That one didn't show it. Yeah, it does.
(Exhibit 8 is marked for identification.)
MS. LEWIS: Let me get one for you guys. I think that's page ...
MS. ZIMMERMAN: Counsel, are you marking this?
MS. LEWIS: I will. Yes. It's Exhibit 8.
MS. ZIMMERMAN: Thank you.
BY MS. LEWIS:
Q Okay. Take a look at what's marked as Exhibit 8, and you can see that on the y-axis they are both 30,000.
A Yes.
Q Can you look at that and tell me if the data is the same, except it's now just showing the one at the top, instead of being on a 14,000 y-axis being the top, it's now 30,000.
MS. ZIMMERMAN: I'd just like to make a record that Exhibit 8, as I understand it, was prepared by counsel, I assume, over the lunch break, and this is not something that was prepared by or

shown to the witness before now.
So to the extent that you have questions about it and he needs some time to review it --
MS. LEWIS: Absolutely.
THE WITNESS: It looks the same to me -- I mean, it looks like the numbers are represented in just a -- by keeping the numbers -- or the y-axis the same.
BY MS. LEWIS:
Q Okay. All right. With the blanket in place, your particle counts went significantly down; is that -- be a fair statement?
A They went down, yes.
Q In a significant way; correct?
A Can you point to me which ...
Q Which one I can --
A Yes.
Q Well, all of them, but I'll give you an example. Let's see.
Let's compare the old Bair Hugger outside clean room, filter in, filter out, page 12.
A Oh, okay.
Q Okay. I just did my best ballparking --
A Uh-huh.

Q -- and it's over a million, the tallest point; right?
A Yes.
Q Which is --
MS. ZIMMERMAN: Page 12 -- are you referring to a graph?
MS. LEWIS: His report.
MS. HARRIS: His report.
MS. LEWIS: His report.
BY MS. LEWIS:
Q It looks like it's at 1:54, maybe somewhere in there; right?
A Yes.
Q Right? Okay.
So it looks like that's the highest point, and it was over a million; right?
A Correct.
Q Okay. And let's look at the old Bair Hugger, same model, with the blanket test.
A Uh-huh.
Q Your highest point -- and I just did my best ballpark guessing -- be about 13,000?
A That's correct.
Q Okay. What's the percentage difference

between, like, a million and 13,000? What's the percentage reduction?
A It would be --
MS. ZIMMERMAN: I'm just --
THE WITNESS: -- a lot.
MS. ZIMMERMAN: -- going to renew my objection as to form --
MS. LEWIS: All right.
MS. ZIMMERMAN: -- given that this is --
THE WITNESS: It would be --
MS. ZIMMERMAN: Excuse me. I want to finish my objection.
I want to renew my objection that this is prepared by counsel, and the witness hasn't had a chance to examine it, and that the actual numbers are reflected in the raw data that's been provided by the witness.
BY MS. LEWIS:
Q What's the percentage? We're talking just from the numbers.
A Well --
Q What's the percentage reduction from over -- a million to 13,000?
A A lot. It would be an order of magnitude of

a couple.
Q Like --
A Two zeros.
Q -- 98- --
A Yes.
Q 98.3 percent --
A Correct.
Q -- reduction?
A Yes.
Q So there's a 98.3 percent reduction with -- from -- in your testing with the blanket connected?
MS. ZIMMERMAN: I'm going to object again --
MS. LEWIS: Is that correct?
MS. ZIMMERMAN: -- to form with the same -- same objection.
THE WITNESS: Yes. The numbers are -- what -- the question that you asked, the answer is yes.
BY MS. LEWIS:
Q That's a significant reduction, wouldn't you agree?
A It's a large reduction, yes.
Q I mean, it's nearly 100 so --
A Yes.

Q -- you know, you can quibble with what, you know, substantial means, but --
A That's --
Q -- 98.7 -- 98.3 percent, pretty substantial and significant; right?
A That's the number, yes,
Q The majority of the particles that the particle counter picked up are also 2 microns or lower; right? Let's look at the top of page 16, your graph on the 750 blanket test, the old Bair Hugger.
A The old --
Q Okay.
A -- Bair Hugger.
Q Yeah.
A Yes.
Q Okay. So -- yeah. What -- greater than 90 percent of your particles are 2 microns or below; right?
A 2 microns, yes.
Q Or below.
A Yes.
Q And for some of the minutes you -- you had no particles; is that right?
A Yes. I believe from --

Q For the first --
A -- 10:11, there was a -- a couple -- two or three zeros in the columns for five sampling episodes.
Q Just looking at the graph alone -- not looking at your hard numbers, but just looking at the graph alone, that's a pretty piddly number of particles that you found.
MS. ZIMMERMAN: Object to form.
BY MS. LEWIS:
Q Right?
A Yes.
Q Was the filter in?
A Yes.
Q Was the filter in for both the 750 and the 775?
A Yes.
Q When you tested the blanket connected to the 775, your findings were pretty similar like the 750, meaning greater than 90 percent of your particles are 2 microns or below; right?
A That's correct, yes.
Q And there were some minutes where you -- where the particle counter detected no particles --

A Yes.
Q -- correct?
MS. ZIMMERMAN: We've been going again for another hour and a half. I don't know when a good spot to take a break is, but --
MS. LEWIS: Give me a few minutes, and we'll take a break if you need to.
THE WITNESS: Sure.
BY MS. LEWIS:
Q You're okay with that?
A Yes.
Q Okay. Were both these tests done on the same day?
A Yes.
Q Was the same container used?
A Yes.
Q Did you just switch out the warming unit?
A No. The warming unit and the hose and --
Q Okay.
A -- the blanket. A new blanket was used for each separate test.
Q Okay. But the container was the same?
A Correct.
MS. LEWIS: Okay. We can take a break if

you need to.
THE VIDEOGRAPHER: Going off the record at 2:38 p.m.
(Recess.)
THE VIDEOGRAPHER: This is Video No. 4 in the deposition of Michael Buck. Today is June 7th, 2017. We're going back on the record at 2:50 p.m.
BY MS. LEWIS:
Q Mr. Buck, I apologize if I asked you this question before, but here's the question.
Did you, for this third evaluation, test for the particle size and amounts in the simulated OR before you did your particle count testing on the blanket?
A I believe we tested the room plus the box, so we did a background sample that included the room and the box.
Q What's -- I'm not sure I understand that. Here's what I'm asking you.
Did you take the particle counter separate from the container box and did you just measure the number of particles in the room in the simulated OR?
A No. We just did it inside the room and the box. So it would be the box inside the room. That

was our background.
Q Okay. You remember the question I asked you earlier about the particle sizes required to possibly carry viable bacteria, and I was --
MS. ZIMMERMAN: Object to form.
By MS. LEWIS:
Q -- and I was saying there was a reference of 4 to 20 microns, and you said you remembered seeing that somewhere in the literature; right?
MS. ZIMMERMAN: I'm going to object to the form of the question.
THE WITNESS: Yes. I believe I've read that. I can't recall where, but it sounds -- there's -- like some familiar verbiage that I've read before, yes.
BY MS. LEWIS:
Q And I asked you if you disagreed with that, and you said no.
Do you remember that questioning?
A Yes.
Q So here's my question now. If -- if that reference is correct that particles need to be at least 4 microns to possibly carry bacteria, would you agree then that 4 micron -- sizes -- particles --

particles -- particle size less than 4 microns would not likely carry bacteria?
MS. ZIMMERMAN: I'm going to object to the form of the question. Assuming facts not in evidence. And foundation.
THE WITNESS: I don't think I'm qualified to answer that question. I'm not an aerobiologist. I -- I don't know the answer to that question.
BY MS. LEWIS:
Q Let's -- assume with me that if that reference is correct that particles have to be at least 4 microns in size to carry -- possibly carry bacteria, then if we took away the particle sizes and amounts that are below 4 microns, this graph would look quite different; right?
MS. ZIMMERMAN: I'm going to object again. Form. Foundation. And an improper hypothetical.
BY MS. LEWIS:
Q In other words --
A You would cut out, you know, three columns of the graph.
Q Correct.
A Yes.
Q For example, the light blue is -- I'm --

I'm -- I'm on page 16, okay, of your --
A Yes.
Q -- report. I'm at the top with the old Bair Hugger, the 750 blanket test. It looks like the lighter blue is the .3 to .5, the red is .5 to 1; correct?
A Yes.
Q And the green is 1 to 2; right?
A Correct.
Q So if we removed the blue, red, and the green, we would remove all those particles sizes that are below 4 microns; right?
MS. ZIMMERMAN: Object to form of the question. Misstates the chart and improper hypothetical.
THE WITNESS: That's correct.
BY MS. LEWIS:
Q And the purple is from 2 to 5 microns; right?
A Yes.
Q May or may not -- well, at least for the 5 microns -- may carry bacteria. So even part of the particles that were from 2 to 5, it's possible, based on the reference that said particle sizes have to be

at least 4 microns, there might be even more of a reduction of the particles that you code in purple; is that correct?
MS. ZIMMERMAN: I'm going to object again to the form of the question as improper hypothetical. Foundation.
THE WITNESS: Based on what you said, that's correct.
BY MS. LEWIS:
Q The orange in your chart is for particles greater than 10 microns; right?
A Correct.
Q And the darker blue is from 5 to 10 microns; right?
A Yes.
Q And there are only a very small smattering -- we can look at your hard data -- of particles in that -- in those two size ranges; right?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Yes.
BY MS. LEWIS:
Q For example, I'm looking at your chart -- and I'll compare your hard data -- but it looks like

there was nothing in the 10 micron range that showed up until 9:40, and that's -- that's 15 minutes after the Bair Hugger was turned on; is that about right?
A Yes.
MS. ZIMMERMAN: I'm going to object again to form of the question and misstating the data reflected on the charts.
BY MS. LEWIS:
Q And let's see.
And then it was 20 minutes after the Bair Hugger was turned on that, again, there were some particles that were greater than 10 microns; right?
MS. ZIMMERMAN: Again, object to form. Misstates the data reflected in the chart and in the witness's report.
THE WITNESS: You're referring to the 200 number?
BY MS. LEWIS:
Q Am I referring to the 200 number?
A Where it says 200 -- oh, yes. I'm looking at one form; you're looking at another.
Q I'm looking at your top graph on page 16, which was, I think, 20 minutes in. It's at 9 -- no. It's at 9:45?

A Yes.
Q Let me see if I can find it.
MS. ZIMMERMAN: I think it's page 14 of Exhibit 4A.
MS. LEWIS: Yeah. Let's find --
THE WITNESS: That's where I got the 200. It says 200 for the greater than 10.
MS. LEWIS: Okay.
BY MS. LEWIS:
Q So at 9:45 -- all right.
And then at 9:46 that's where you've got 520. That's kind of the largest orange little circle. It looks like that was 520?
A That's correct.
Q And before that it was 200?
A Correct.
Q And then the three minutes before that it was zero, and the same with respect to particle sizes between 5 and 10 microns.
For three minutes there were no particles in those size ranges; right?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Yes.
///

BY MS. LEWIS:

Q So if we removed from your graph those size particles where, again, based on the reference that you've got to have a particle size of 4 microns to contain bacteria, this chart would look quite different; right?

MS. ZIMMERMAN: Object again to form. Foundation. Misstating the witness's testimony and misstating the reports and the data underlying it. It also misstates prior testimony from the witness.

BY MS. LEWIS:

Q You can go ahead and answer.

A According to what you said, the graph would look different, yes.

Q Let me show you another graph I've done, and you can tell me if it is -- if it accurately takes out particles 2 microns and below.

MS. ZIMMERMAN: Is this being marked too? 9?

MS. LEWIS: That's 9.

(Exhibit 9 is marked for identification.)

MS. ZIMMERMAN: Just for the record, I'm going to object again that Exhibit 9 is prepared by

counsel, not by the witness. And so to the extent the questions are being posed to the witness about this that -- he hasn't prepared this document, and it may or may not reflect the information provided in his report.

MS. LEWIS: Yeah. I'll represent that I prepared that.

BY MS. LEWIS:

Q So do you still understand the question?

A Yes, I do.

Q Okay.

A Yes. That would be what the graph would look like if you take away the columns that you mentioned.

Q Okay. And I have one more to show you. If we again compare apples to apples like we did for your second evaluation and we put them both on the same linear scale.

A Okay.

Q Let me show you that graph that I also prepared, and you can tell me if it's accurate.

(Exhibit 10 is marked for identification.)

MS. ZIMMERMAN: And, again, for the record, I'll say that this Exhibit 10 was prepared by

counsel, I think over lunch hour, and was not prepared by the witness and may or may not reflect the data that is in his report and the underlying hard data that he's been testifying about this morning.

BY MS. LEWIS:

Q Does that look about right -- accurate? It's just again taking that --

A Oh.

Q -- upper one --

A Okay. So --

Q -- and putting --

A -- the same.

Q -- it on a --

A Right.

Q -- 30,000 --

A Yeah.

Q -- y-axis.

A Yes. Based on what you said, it looks correct.

Q After you ran this for 24 minutes for both the 750 and the 775, did you do anything else during this third evaluation?

MS. ZIMMERMAN: Object to form.

BY MS. LEWIS:

Q With respect to your testing, did you do any further -- was there any other part of the test in the third evaluation that we haven't discussed?

A No.

Q You turned it off. Was there anything else that you did during this third evaluation?

A No.

Q Was this third evaluation conducted in close proximity to a surgical site?

A It would be -- simulated operating room table. But an actual surgical site, no, it was -- there was no person there.

Q Did you conduct this third evaluation with the use of an anesthesia drape?

A No.

Q Did you do any testing to qualify the types -- or categorize the types of particles that were coming out, other than size?

A No.

Q I want to talk about the conclusions that you reached on page 17. When we were looking at Exhibit 6, I believe you testified that you weren't relying on any articles or documents listed in

Exhibit 6; is that right?
A That's correct.
Q Your statement in your conclusion -- conclusion section on page 17 of your report says, first sentence:
"The evaluations showed clearly the Bair Huggers, through all operational modes, demonstrated increased production of particles from internal and/or external sources."
What do you mean -- "increased"? Compared to what?
A Increase basically -- when the machine was on, it was producing particles either internally or through the unit that we measured using the particle counter.
Q But how is it increased? What did you compare it to to say it's now increased?
A I guess the increase would be from the time that we started sampling or the periods of sampling to the time that we finished sampling that there was an increase in the particles at certain times.
Q Is that what you meant? That during your test you saw an increase? Is that what you're

saying?
A Particles were produced as a result of running the machine -- or particles were measured as a result of running the machine.
Q Well, I understand you were measuring particles. I'm trying to understand how you can conclude that your testing showed increased production of particles.
How did you show an increase in particles? Because "increase" means it's -- you're comparing it to some baseline. So what are you comparing it to to say there was an increased production?
A Well, when we were in the clean room, we started basically at that low level and particles were increased as we ran the machine. And we also started from a zero point from zeroing the machine, for the particle counter, so particles were increased as the machine was running.
Q As the machine was running, the warming unit is taking in air and particles; right?
A Correct.
Q So how did you reach a conclusion that there was an increase? Because you didn't measure the number of particles going in; correct?

MS. ZIMMERMAN: Object to form.
THE WITNESS: I'm sorry. We didn't measure the what?
BY MS. LEWIS:
Q You told me you did not measure the number of particles going into the warming unit; correct?
A Yes. That's correct.
Q So how did you reach a conclusion that they increased when you haven't taken into account the number of particles that went in?
A The particles that we measured were only in the flex tube of the Bair Hugger, and those particles were counted; so, therefore, we were -- the number was increased -- or that number increased as we counted or as we were running our experiments.
Q But do you understand that the bottom of the warming unit is taking in air, which means it's taking in particles; right?
MS. ZIMMERMAN: Object to form.
THE WITNESS: Yes.
BY MS. LEWIS:
Q And there was no way you made a distinction as to what particles were going in compared to the particles going out; correct?

MS. ZIMMERMAN: Object, again, to form.
THE WITNESS: I guess the way you're asking the question, that would be correct.
BY MS. LEWIS:
Q Is there any other reason why you're saying your testing showed an increased production of particles?
A Because that's what we felt that we measured, was an increase in particles as a result of the steps that we put the Bair Hugger through.
Q But you now understand that there was air coming into the warming unit that had particles in it?
MS. ZIMMERMAN: Object to the form of the question --
MS. LEWIS: Right?
MS. ZIMMERMAN: -- foundation. And misstates the witness's testimony.
THE WITNESS: That air was filtered, run through a filter too.
BY MS. LEWIS:
Q Correct.
A Right.
Q And did you take into account the particles

that went into the Bair Hugger warming unit?
A That went into it through the filter?
Q Yes.
A That's what we were counting besides the particles that were internal or in the unit itself as part of its running.
Q You admit that air was going into the unit --
A Yes.
Q -- correct?
Air is going out; correct?
A Yes.
Q And you did not measure the particles going in; correct?
A Not directly in the machine. We took background samples in the room, and we also took outside controls in some experiments as well.
Q At the time of the testing, just before you started and turned on the Bair Hugger, you did not test -- or during the running of the Bair Hugger, you did not test the particle count going in?
A Correct.
Q You also state that your findings are "consistent with both published literature and

internal Arizant and 3M Company documents."
Did I read that correctly?
A That's correct.
Q What published literature are you referring to?
A I was -- it was discussed with counsel that -- we went over some of the documents that they had, and that's where that came from.
Q What published literature are you referring to?
MS. ZIMMERMAN: Well, I'm going to object to the extent that the question calls for work product privilege communication.
To the extent that there are articles that are contained in Exhibit 4 in the file that the witness brought with him, perhaps that goes to counsel's question.
MS. LEWIS: I'm objecting to all the sidebar conversation.
BY MS. LEWIS:
Q What published literature are you referring to in your report where you say "your findings are consistent with"?
A I reviewed a 3M Company document that was

given to me that has some information in it that is --
Q All right. So you're saying you're relying on a document that would have been work product from plaintiffs' counsel?
A Yes.
Q Okay. Did you rely on any published article?
A No.
Q So you are not relying on a study called McGovern study?
A No.
Q You're not relying on a study called Reed?
A No.
Q You're not relying on a study called Albrecht that was published in 2009?
A No.
Q You're not relying on an Albrecht study that was published in 2011?
A No.
Q You're not relying on a published study -- the first -- author's name is Belani?
A No.
Q Likewise, you're not relying on any studies

by an author whose last name is Legg, L-e-g-g?
A No.
Q I'm correct?
A Yes.
Q It sounds like you aren't able to, I guess, name a particular document that you might be referring to, but you're saying there was some company document that you reviewed, but you can't tell me what that document is?
A I don't specifically know what it was called, no.
MS. ZIMMERMAN: And if I can interject here. So the question you're asking about is "consistent" versus "rely," and so perhaps that's where some of the confusion is coming in.
His report says that there's a consistency with something, but it doesn't say anything about relied upon, so I guess maybe that's where the -- to the extent that I'm confused about the question, that may be where it's coming from.
BY MS. LEWIS:
Q As you are sitting here today, as you explained, you can't tell me one single published study that your findings are consistent with;

right?
A Correct.
Q Because you did not do your testing in an actual OR, all your testing showed was what was coming out of either the Bair Hugger blanket or the hose at the time you were doing your testing; correct?
A Correct.
Q You weren't able to follow that particle to see where the particle went; correct?
A Correct.
Q It would be guessing on your part to say where that particle went; correct?
A Correct.
Q So your -- from your testing you can't say that particles are in close proximity to the surgical site; correct?
A No, I cannot. I can say that particles were generated in and through the Bair Hugger --
Q And you --
A -- as it --
Q -- can't say that they were close -- in close proximity to a surgical site; correct?
MS. ZIMMERMAN: Object to form.

THE WITNESS: No, I cannot.
BY MS. LEWIS:
Q Do you have any more work that you've been asked to do in this case?
A No.
Q Are you intending to do any more work?
A Not at this time.
Q With respect to the particles that came out of the blanket for those larger sized particles that were greater than 10 microns, because you were manipulating the blanket inside the container, you can't say whether those particles came from your hands or not, can you?
MS. ZIMMERMAN: Object to the form of the question.
THE WITNESS: No, I cannot say where those particles came from, just that we counted them.
BY MS. LEWIS:
Q Correct.
So you can't say that they actually came from the hose through the blanket; correct?
A That's correct.
Q Since you've been retained -- it's a little bit different question than before -- have you

contacted the FDA or written to the FDA about the Bair Hugger blanket?
A No, I have not.
Q Have you written to ASHRAE to complain about any standard with respect to MERV efficiency testing?
A No, I have not.
Q Have you written or spoken to the CDC about the Bair Hugger blanket?
A No, I have not.
Q Have you talked to any of the plaintiffs in this case, the individuals who have brought lawsuits?
A No, I have not.
Q Have you talked to any of the treating physicians who have treated the patients who have brought lawsuits -- in this lawsuit?
A No, I have not.
Q Have you talked to any of the authors that I listed? And I'll go through those names again.
Have you talked to a man named Paul McGovern?
A No, I have not.
MS. ZIMMERMAN: I'm going to object to this whole line of questioning as asked and answered.

BY MS. LEWIS:
Q Mark Albrecht?
A No, I have not.
Q Kumar Belani?
A No.
Q Christopher Nachtsheim?
MS. ZIMMERMAN: Object to form. Same.
THE WITNESS: No, I have not.
BY MS. LEWIS:
Q Mike Reed?
A No, I have not.
Q Robert Gauthier?
MS. ZIMMERMAN: Again, object. Asked and answered.
THE WITNESS: No, I have not.
BY MS. LEWIS:
Q Mark Litchy?
A No, I have not.
Q David Leaper?
A No, I have not.
Q I think it's Andrew, but I may be wrong.
A.J. Legg?
A No, I have not.
Q A.J. Hamer?

A No, I have not.
Q I appreciate your patience on this.
But K.B. Dasari?
A No, I have not.
Q M. Harper?
A No, I have not.
Q Oliver Kimberger?
A No, I have not.
Q Do you agree that it's bacteria that cause surgical site infections, not particles?
MS. ZIMMERMAN: I'm going to object to foundation.
THE WITNESS: I'm not a physician, so I don't feel qualified to answer that question.
BY MS. LEWIS:
Q Have you talked to any of the hospitals where you provide consulting services and ask them or talk to them about not using the Bair Hugger?
A No, I have not.
MS. LEWIS: Thank you for your time, sir.
Pass the witness.
MS. ZIMMERMAN: I'm going to take a quick break, but we've got some questions.
MS. LEWIS: Okay.

THE VIDEOGRAPHER: We're off the record at 3:23 p.m.
(Recess.)
THE VIDEOGRAPHER: Back on the record at 3:31 p.m.

EXAMINATION
BY MS. ZIMMERMAN:
Q Thank you. Mr. Buck, my name is Genevieve Zimmerman, and, as you know, I represent plaintiffs in the multi-district litigation that's currently pending here in Minnesota involving plaintiffs across the country who have brought claims against 3M.
And I'd like to ask follow-up questions in light of some of the questions that counsel for 3M has asked so far today.
A Okay.
Q Have you -- is part of your job to evaluate operating rooms?
A Yes.
Q And is part of that evaluation -- does that involve determining a particle count?
A Yes.
Q And is that -- is that because particles are

important to hospitals and surgeons?
A Particles are very important in an operating room, yes.
Q All right. And, if you know, you know, do hospitals spend a great deal of money trying to reduce particle counts in operating rooms?
A Yes, they do. The -- the particles in operating rooms are trying -- because of the design of the room and the number of air changes and the positive pressure that's typical for an operating room, it's all meant to reduce the number of particles that are in the room.
Q Okay. And that's why a hospital might retain your services, to evaluate particles in the operating room; is that right?
A That's correct.
Q All right. And when hospitals do retain your services in this regard, are they concerned with only particles that are greater than 4 microns?
A No, they are not. Typically they are concerned with all of the particles that are measured using the particle counter.
Q Okay.
A And they like to see that there is a

significant or greater than 90 percent reduction compared to control samples or 95 percent even in some cases.
Q Okay. And in conducting a particle count, is that something that you routinely do in your job?
A Yes.
Q All right. And -- and we -- you've had some questions posed to you about the Fluke sampler machine.
Do you recall that?
A Yes. I had several questions, but I do recall questions about the Fluke.
Q Sure.
In -- in your course of conducting some experiments in this -- with -- with respect to this case, did you use a Fluke model 983 particle counter?
A Yes.
Q Is that -- is that tool something that you use with some frequency?
A Yes.
Q And is it something that you've been trained to use?
A Yes.

Q All right. Is it something that you require supervision to use?
A No.
Q All right. And with respect to particle count tests, is that something that you do on your own from time to time?
A Yes.
Q All right. And sometimes you do it with others as well?
A Yes, depending on if I'm working with somebody or not, but yes.
Q Okay. And -- let's see.
And you have -- you have from time to time worked with Mr. Streifel; is that correct?
A Yes.
Q And then also you've done particle counts and experiments on your own as well; correct?
A Yes. I've done more on my own than I have working with Mr. Streifel, but yes.
Q Okay. And with respect to the Fluke machine we discussed, did you follow your standard protocol in using that machine?
A Yes. Typically standard protocol is to zero the particle counter.

Q What does -- what does that mean? I'm sorry to interrupt you.
A The zeroing the particle counter is to place a HEPA filter, a small HEPA filter -- I think it was visible in one of the pictures in my report -- is to place the HEPA filter on the probe and run the machine to basically -- until you get zeroes in all the categories or all the cut sizes of the particle sizes.
You're basically clearing the particle counter. It is an optical particle counter, so you're clearing the device of particles so when you do take samples, it's reflective of the environment that you're sampling in and not particles that might still be --
Q In existence from a previous experiment, for example?
A Yes.
Q Okay. And the -- the numbers -- you said that the particle counter actually does optically count particles in the room; is that right?
A Yes.
Q And is that measured per cubic foot?
A Yes. You can set it up to measure in

different volumes, but for the purposes of this report, it was measuring particles per cubic foot.
Q All right. And so you had questions posed by counsel about perhaps particles in the -- you know, in the entirety of a clean room or the entirety of a mock OR.
Is -- is that what the particle counter is capable of counting?
A No. It's only sampling at the tip of the probe and giving results based on the volume that's sampled, whatever you choose to have the results in. In this case it was particles per cubic foot in each of the selective five size ranges.
Q All right. And you used the same volume analysis for each of the experiments you did in this matter?
A Yes.
Q All right. And that was cubic foot?
A Yes.
Q Okay. And then you generated a report confirming your findings in this case; is that correct?
A Yes.
Q All right. You also were asked some

questions about air exchange rates.
Do you recall that?
A Yes.
Q All right. Is it your understanding -- as an air exchange rate goes up, would you expect a particle count to go up or down?
MS. LEWIS: Objection. Foundation.
THE WITNESS: As air exchange rate is higher, depending on the filtration efficiency, you would expect particle counts to go down.
BY MS. ZIMMERMAN:
Q Okay. Let's talk about positive pressure. You had some questions posed to you about positive pressure, both -- in the clean room.
What impact, if any, does a positive pressure have on measuring particles in a clean room?
MS. LEWIS: Objection. Foundation.
THE WITNESS: The particle -- the positive pressure environment is meant to push the air that's in the room out so no contaminants or no particles from outside are coming into the room.
So if you have a highly filtered environment, such as a clean room or an operating

room, that continued filtration or air that's moving in through highly filtered -- high efficiency filters is clean air in respect to outside.

So you want the clean air to stay in the, shall we say, clean room or operating room versus outside air that is not as highly filtered or might have more particles or contaminants in it.

BY MS. ZIMMERMAN:

Q All right. And if you know, is the intent behind positive pressure to essentially clear any lingering particles from the room?

A It's meant to basically bring in as much highly filtered air as possible or is what's designed for the room.

Q Okay. And with respect to the questions posed to you on your third experiment, the blanket that was inside the box -- do you recall that?

A Yes.

Q -- was there a -- was there positive pressure in -- in the box in that experiment as well?

A Yes. There was a significant amount of positive pressure as a result of the air being pumped in from the Bair Hugger into the blanket.

Q All right. And what impact does the existence of positive pressure in the box have with respect to your opinions about particle -- particles in the box?

A It was bringing in filtered air into the blanket and pushing the other air out or other air that was in the box out, so it was continually bringing in filtered air from the blanket.

Q All right.

A Or from the Bair Hugger machine into the blanket.

Q Okay. And counsel posed some questions to you about the possibility that particles from -- from your hands in handling the blanket may have -- I'm going to just kind of paraphrase here -- lingered in the box.

Is that -- would that be consistent with your experience with respect to a -- a positive pressure in the box?

MS. LEWIS: Objection. Foundation.

THE WITNESS: Typically when you have positive pressure, the air is, shall we say, cleaned, meaning the air inside a room, or inside a box in this case, would be changed out or new air

would be brought in that is from another filtered environment.

So that air that's in that box would be changed over in a very rapid period of time. So for things to linger in the box wouldn't be likely.

BY MS. ZIMMERMAN:

Q And do any of the data points on the measurements that you took reflect this positive pressure inside the box? And I guess I'll refer you to, say, page 14 of Exhibit 4A, which I think is the raw data from that third experiment.

A Well, the fact that the numbers are changing from each successive trial or each sampling event would reflect that that number -- that box is being changed over with air or new air is being brought into it.

Q Okay. And in your opinion, then, given your experience with the particle counter and with positive pressure, would -- do you have an opinion about whether it's more likely than not that that air was new air?

MS. LEWIS: Objection. Foundation.

THE WITNESS: As the amount of air that was being brought into the box and the amount of air that

was escaping the box, it was -- it's highly likely that the air was changed over several times so that air would be new air as opposed to old air in the box.

BY MS. ZIMMERMAN:

Q And so if the -- if it's your opinion that the air that you're sampling is more likely than not the new air, would -- would it also be consistent that any particles that you're measuring are also more likely than not new particles?

MS. LEWIS: Objection. Foundation.

THE WITNESS: The particles that we measured in each successive time would more than likely be the new particles or the new air, that is, the particles in the air that was being brought into the box.

BY MS. ZIMMERMAN:

Q Okay. The particle counter -- you had some questions posed to you by counsel about your ability to offer an opinion about where particles might be with respect to the surgical site.

Do you recall that line of questioning?

A Yes, I do.

Q Did you position the -- the Fluke particle counting machine on the operating room table?

A In the -- I guess --
Q In the third experiment.
A Yes. It was on the table. We tried to position it in the thorax area or what would be considered the chest area, I guess, since the blanket was a -- that type of a blanket.
Q An upper body blanket?
A Yes. Thank you.
Q Sure.
So is there -- is the picture on page 15 of Exhibit 2 of your report, does that show where the particle counter was on the operating table?
A 15? Do you have it?
Q I think it might be this document right here.
A Okay.
Q Right here. That one.
A 14.
Yes.
Q And so that kind of golden colored tool or instrument, that's the Fluke particle counter?
A Yes --
Q Is that --
A -- that's the one we used, yes.

Q Okay.
A That's the 983.
Q And you were measuring, then, particles that were on -- essentially on top of the operating table; is that right?
A Yes. Inside the box, but it would be on top of --
Q Okay.
A Yes.
Q And then with respect to the particle counter itself, it is this kind of golden colored machine depicted on page 15 of your report; is that right?
A That's correct.
Q And there was some questioning about a green tube that connected to the particle counter.
Do you remember that?
A Yes.
Q Can you use the particle counter without the green tube attached?
A Yes.
Q Was that what you were trying to describe earlier in some of the questioning when Mr. Streifel, I think, took the tube on and off; is that right?

A Yes. When we were doing background sampling, yes.
Q Okay. And so the particle counter can measure particles in the air without that green tube attached; is that right?
A Yes.
Q Does the green tube and the probe essentially act as an extension of where --
A Yes.
Q Okay. Do you have experience, generally speaking, in evaluating operating rooms and particles inside those operating rooms?
A Yes.
Q And you've been called upon from time to time to measure those particles?
A Yes.
Q Do you have a general familiarity about what number of particles you might expect per cubic foot in an operating room?
A For the total number of particles?
Q Yeah. Per square foot.
A Okay. So typically what we look at is a --
Q Cubic foot, I should say.
A -- is a significant reduction, a reduction

of, say, 95 percent or 90 to 95 percent in the surgi- -- above the surgical table.
Q Okay.
A So when you start getting numbers 50 or less, that is acceptable.
Q Okay.
A But you would also take into account controls, either inside or outside controls, and the filter -- the filters and the efficiency of the filters that they are using in the OR, whether they're MERV 14 or higher.
Q Okay. So is it -- am I hearing you correctly that -- that you would expect something less than 50, at least in terms of particles per cubic foot, measured essentially above an operating room table?
MS. LEWIS: Objection --
THE WITNESS: Yeah --
MS. LEWIS: -- foundation.
THE WITNESS: -- if the -- there's no activity in the room and it's a modern OR or an OR that is designed with a laminar flow system, that would be an acceptable number, yes.
///

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BY MS. ZIMMERMAN:

Q All right. Do you have an understanding about how often air exchanges should be made in an operating room per hour?

A Around 16 to 20 air changes per hour. 20 air changes an hour is --

Q Okay.

A -- kind of the norm.

Q And you also had some questions posed to you about various equipment that was -- that may be in an operating room besides the Bair Hugger.

Are you aware of any -- any device in the operating room that generates over 100,000 particles per cubic foot as you sit here today?

A Not that I measured, no.

MS. ZIMMERMAN: Okay. I think that's all I've got at this point today, at least at this point.

FURTHER EXAMINATION

BY MS. LEWIS:

Q Mr. Buck, were the particles that you measured containing tracers in the container?

A No.

Q Were they color coded when they came out of

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the blanket in the container?

A No.

Q Did they make a certain noise or something when they came into the container?

A No.

Q So you could see something that others couldn't see with particular particles in the container?

A No.

Q So it's pure guessing on your part on what particles may have left the container during the -- during your testing; correct?

MS. ZIMMERMAN: Object to form of the question.

THE WITNESS: I wouldn't call it guessing. I would call it based on experience and my knowledge of how the pressurization of positive pressure and the filter that was in line in the Bair Hugger unit, how all that comes together; and the air that was moving, the volume of air I'm talking about, inside the box and how that air is -- is exchanged or pushed out of the box and new air continually being brought in.

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BY MS. LEWIS:

Q And you couldn't see which particles remained in the box in the container from the start and what particles were in there at the end of your testing; correct?

A That's correct. I'm just merely using the pressurization that was evident in the box as a result of the testing we were conducting with the Bair Hugger.

Q And that's the only basis for you saying you're -- you're saying because of pressure, not because you have any certainty that the particles that were in the box at the time you started were not still in the box at the end of the testing; correct?

A Correct. The velocity in the box was high enough that particles were continually being moved in and out of the box, so that's what I'm basing my answer on.

Q But you can't say that some of the particles that were in there in the beginning weren't still in there; right?

A I cannot say that. All I can say is that there was a large volume of air in the box and that

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the air was being pushed out of the box as a result of the positive pressure of our test.

MS. LEWIS: Thank you.

MS. ZIMMERMAN: One last question.

Mr. Buck, you -- even -- even in light of counsel's questions, you've offered opinions in this case that you hold to a reasonable degree of certainty based on your education, training, and experience; is that right?

THE WITNESS: That's correct.

MS. ZIMMERMAN: All right. And you stand by the report that you provided in this case?

THE WITNESS: I do.

MS. ZIMMERMAN: That's all I have.

MS. LEWIS: Thank you, sir.

MR. ASSAAD: Thank you.

THE VIDEOGRAPHER: We're going off the record at 3:50 p.m.

(WHEREUPON, the deposition was adjourned at 3:50 p.m.)

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ERRATA SHEET

Page/Ln	Correction	Reason

MICHAEL WAYNE BUCK

I, MICHAEL WAYNE BUCK, have read this transcript, pages 1 - 233, and acknowledge herein its accuracy except as noted on the errata sheet.

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SIGNATURE

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NOTARY PUBLIC

MICHAEL WAYNE BUCK

STATE OF MINNESOTA
COUNTY OF DAKOTA

CERTIFICATE

I, Cynthia M. Kirsch, hereby certify that I reported the Deposition of Michael Wayne Buck, on the 7th day of June, 2017, in Minneapolis, Minnesota, and that the witness was by me first duly sworn to tell the truth and nothing but the truth concerning the matter in controversy aforesaid;

That I was then and there a notary public in and for the County of Dakota, State of Minnesota; that by virtue thereof I was duly authorized to administer an oath;

That the foregoing transcript is a true and correct transcript of my stenographic notes in said matter, transcribed under my direction and control;

That the cost of the original has been charged to the party who noticed the deposition and that all parties who ordered copies have been charged at the same rate for such copies;

That the reading and signing of the deposition was not waived;

That I am not related to any of the parties hereto, nor interested in the outcome of the action and have no contract with any parties, attorneys, or persons with an interest in the action that has a substantial tendency to affect my impartiality;

WITNESS MY HAND AND SEAL this 19th day of June, 2017.

_____

Cynthia Kirsch
Notary Public

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